COAL AGE

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Would a Department Store Put Up a Sign Like This?

What department store would be assailed if it made less than 10 per cent profit per year? Most of them make much more than that on every sale, and nobody is disposed to inquire into the matter.

Public's Duty to Coal

"The coal operators' duty to the public." That phrase has been constantly on the tongues of politicians, uplifters, profiteers, common folks and others. They seemed to feel that the duty runs all one way—from the industry to the public. The idea probably never occurred to them that the obligation is two-fold and that the public owes a duty to the bituminous-coal industry, but the majority report of the Coal Commission jams that fact into the conscience of the public with a directness that ought to enlighten and convince.

The observations and recommendations of the majority in this respect are calm and sane. First of all, they turn a curing flood-light of information and sound reasoning upon mischievous misapprehensions which have been fostered in the public mind by designing and prejudiced persons. Such information ought to dispel that dangerous fog of misunderstanding and satisfy the public that the various proposals for far-reaching, un-American regulation and control of the coal industry are wholly unnecessary.

There have been widely heralded charges of profits varying from 100 to 300 per cent and in some instances running up to 2,000 per cent on the capital invested in the mining of coal. Such charges from the high officials responsible for them had to be considered by the commission. In respect to these allegations we are shown a compilation of the self-same Treasury reports that were so blatantly cited.

That compilation shows that all the bituminous producers reporting, after paying their taxes, made only 9.72 per cent on their investment in 1918, while "the companies reporting very high rates of return upon investment are all small concerns with investments of only a few thousand dollars whose net income represents to a large extent the earnings of the owners for their own labor and management." Only a little over 9 per cent return on invested capital for an enter-

prise as hazardous as the mining of bituminous coal!

Then Messrs. Robinson and Peale shift the spotlight of common sense onto the threadbare scarecrow of "a combination to maintain coal prices." The consumer is reassured by their conclusion that "such a combination, besides being illegal, is quite impractical, in view of the 7,000 companies involved, located as they are in some 26 or 27 coal producing States."

Accordingly, there is no occasion to doctor the industry with governmental strong medicine designed to cure illegal combination and profiteering. The nation is told plainly that these are not the diseases which afflict the patient. The physicians then proceed to give the correct diagnosis and to prescribe a proper method of treatment.

Consumer Not Without Fault

The consumer of coal is told bluntly that most of his coal troubles are his own fault, springing from the fact that he has been heedless of his duty to the men who dig and ship his coal. He is shown that his dereliction causes injury to the coal industry. After pointing out the fact that irregularity of mining operations is the primary cause of high coal prices and dissatisfaction among the miners, the report says "it is evidently the public's duty to aid in the stabilization of the coal market by purchasing and storing as much coal as possible during the spring and summer."

The report goes on to point out the overdevelopment of mining facilities, the overmanning of the industry, and the excess transportation required to care for the fall and winter peak demand, when belated coal buyers are all in the market at once. At the other extreme are idle mines, idle men and idle coal cars in spring and summer, when these same buyers are "waiting a while" to buy their coal. Prices fluctuate widely and the coal business becomes merely a gamble.

Worse yet, those are most hurt who can least bear the injury. The poor and needy small consumer, who, as a class, buys but a fraction of the nation's coal and who is unable to buy and store coal in the spring and summer, is the chief victim of the high prices brought about by big belated consumers bidding up the market to obtain at the last minute what are to them comparatively small quantities of needed coal. To the poor householder or struggling manufacturer, with no place to store coal, even if he had the funds, that is a most serious hardship. On the other hand, when the spring slump comes and the bottom drops out of prices, small struggling operators are the individuals hardest hit.

The commission faces this situation unshrinkingly. It says unhesitatingly that the railroads, the iron and steel producers, the public utilities and the other big consumers of coal must shoulder the large share of the responsibility for these conditions. It puts the job of effecting a remedy squarely up to them as a duty they owe the coal operators, the miners and the other coal consumers. In this connection it condemns frankly the traditional coal purchasing methods of the railroads and warns them that in the light of fair dealing and broad public interest, preferential car supply as part payment for coal is unconscionable.

The duly authorized branches of government are shown the necessary steps to obtain the full co-operation of the coal industry, the carriers and the consumers in stabilizing the business. Moreover, the commissioners have shown the practical way to accomplish results by going out and getting powerful consumers to accept their public responsibility and to start better methods of handling their fuel supply.

A Return to Common Sense

This way of telling the public of its own shortcomings and advising it to remedy its own faults instead of choosing fantastic theories of economic betterment seems strangely new and refreshing. As a matter of fact, it is a return to cool, American common sense in dealing with our great economic and social relationships, but after the welter of confused thought and strange doctrines that have surged about us how epoch-making the simple findings and practical recommendations seem.

Perchance we have here the herald of a better day. The consumer owes some duties to the producer which he must discharge if our social and industrial conditions are to be remedied. Just consider for awhile the application of that idea to the relations of the public and big businesses.

Ford Collieries Co. Reduced Its Accident Insurance Cost

When a Safety Committee, Composed of All the Officials Who Supervise Work, Is Induced to Function Actively, Tangible Results Are Forthcoming—Only One Fatal Accident for an Output of 3,000,000 Tons

By Donald J. Baker
Pittsburgh, Pa.

WHEN the announcement was made by the Pennsylvania State Department of Mines a short time ago that the Ford Collieries Co. was the first coal producer to receive the benefits of the 40 cent credit under Item 1 of General Safety Standards of the Compensation Rating Schedule, more than passing significance was attached to the statement. In fact, there was a ripple of surprise manifested by some four thousand or more companies throughout the commonwealth.

Who is the Ford Collieries Co. is a fair question? To those who are familiar with the coal-producing firms of the Pittsburgh district the question is readily answered, for this company has been known for some time as a progressive one, one that leans heavily toward providing adequate safety measures in its mines. But to those who are not so familiar with the Pittsburgh region it might be pertinent to mention that the Ford Collieries Co. is a subsidiary of the Michigan Alkali Co.

The mines of the firm, three in number, are located in northern Allegheny County near the Butler County line. The company was organized in 1908 and development of a 2,200-acre tract of the upper and lower beds of Freeport coal was commenced the same year. The main offices of the company are at Curtisville, which is a central location for the three mines. A. R. Pollock is general manager of mines and M. S. Murray is safety engineer. To the latter, of course, falls the lion's share of the credit for the signal recognition of these mines by the state for the practical application of safety principles therein.

How has this company, which is relatively young and comparatively small—having an estimated output of 1,500,000 tons yearly—succeeded in capturing the leading position in a competition of progressiveness? Certainly no company could hope to receive such honor by merely following stereotyped methods that have long been laid down and accepted as standards in the safety movement. There must have been a keen initiative spirit shown. Innovations must have been made in safe practices, and any safety devices that have been installed must by necessity be highly practical. This, in sum and substance, is exactly what the Ford Collieries Co. has done under the guiding hand of the safety engineer. No standards have been accepted until assurance has been given of their practicability.

The entire safety program of the Ford Collieries Co. is centralized around the safety engineer. This is in accordance with article (a) under Item 1 of the General Safety Standards, which provides that the safety inspector have charge of the safety activities. He is at the head of a central safety committee which includes 50 officials of the company's three mines. This com-

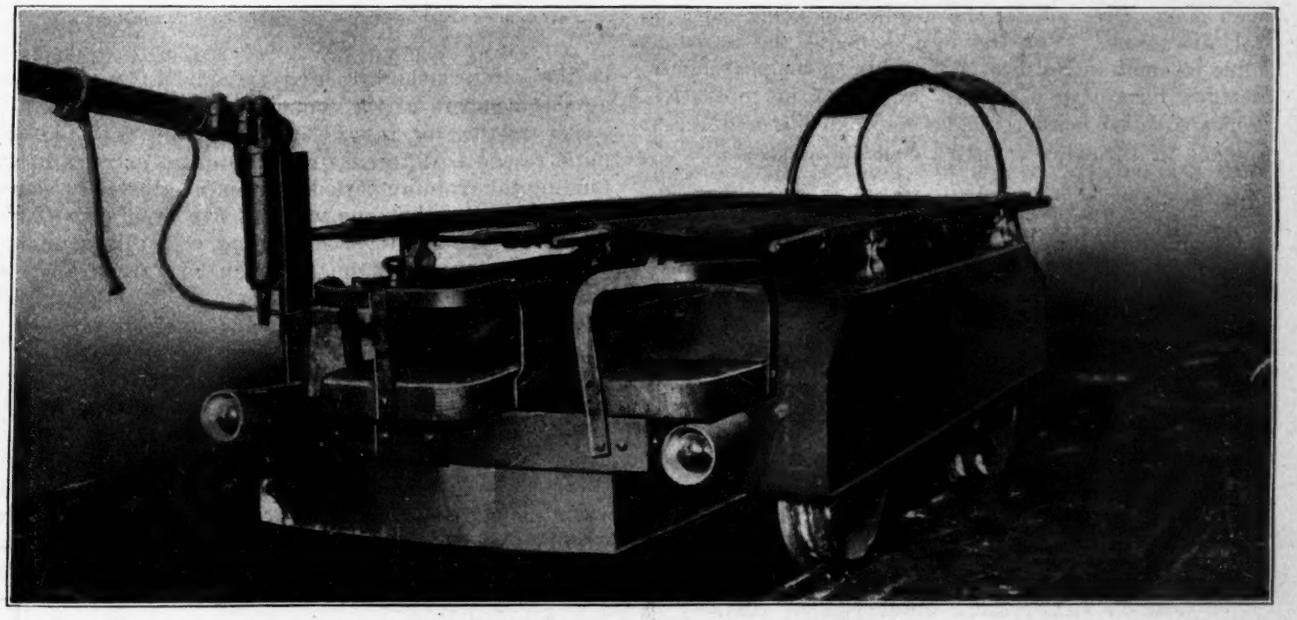


FIG. 1. MOTOR-DRIVEN MINE AMBULANCE

This machine seats four people and carries two stretchers. Note the canvas hood over the end of the stretcher to protect the patient's face and prevent his eyes from following the roof, thus causing nausea.

mittee includes every mine foreman, assistant mine foreman, fireboss, boney-boss, superintendent, and in fact all men who in the performance of their duties supervise the work of others. This committee meets

FIG. 2. BLANKET BOX ON MINE AMBULANCE

Blankets, both rubber and woolen, are kept and carried in a galvanized-iron box stowed away in the ambulance. This box also contains first-aid supplies.

once a month under the chairmanship of the safety engineer. At each meeting a general informal discussion takes place as to how the operation of the mines can be made easier. This theme is in perfect accord with the compensation law.

Now let us see what can be accomplished under this section of the statute when a company whole-heartedly throws its resources into the balance in an endeavor for safer mines.

The officials of the company that attend these meetings are highly interested in all of the discussion that arises. There is little doubt that each has trained himself to be ever on the "*qui vive*" for a safer practice or to suggest some problem for solution that will lead to the adoption of a safer method of procedure. These men make notes during the month and bring them up for discussion. For instance, suppose the assistant mine foreman in No. 1 mine has, during the past month, noted a hazard in a certain section of his operation. Perhaps this hazard could be eliminated if a different method of throwing a switch could be devised.

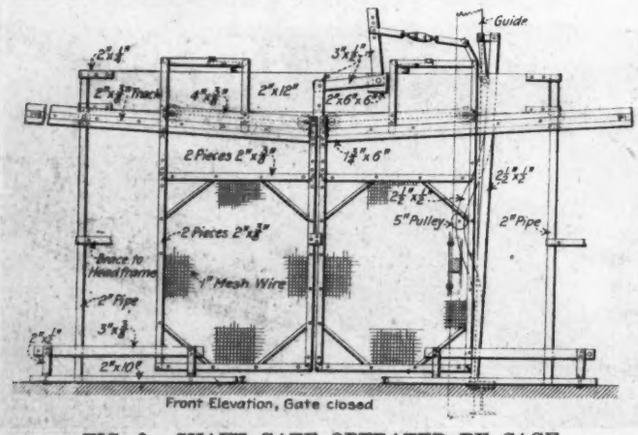


FIG. 3. SHAFT GATE OPERATED BY CAGE

When the cage reaches ground level a cam strikes a roller on a vertical lever, forcing the lever outward, and through a system of levers and shafts changing the inclination of the gate-supporting tracks. The gates thus open by gravity.

This recommendation is noted by the safety engineer and the point in question is investigated. If the facts in the case appear to bear out the assertion, the men of mechanical ability in the company are notified and at once start to devise a safer and more practical scheme to supplant the old one. The theory is not a bad one to work on and as a matter of fact is practical when several minds are concentrated on the same problem. Sooner or later a new method is perfected and then a hazardous practice has been eliminated.

This all sounds highly interesting in theory, but the Ford Collieries people have actually made it work out with excellent results in practice, as will be shown later on. Undoubtedly the whole keynote of a successful functioning of a central safety committee lies in keeping the officials interested. This has been accomplished in this instance without seeking the customary mercenary levels. A competitive spirit has been aroused and each official is made to feel that his particular duties must be kept on at least a par with those of the officials of the other mines. One of the most potent factors contributing to the success of the Ford Collieries Co.

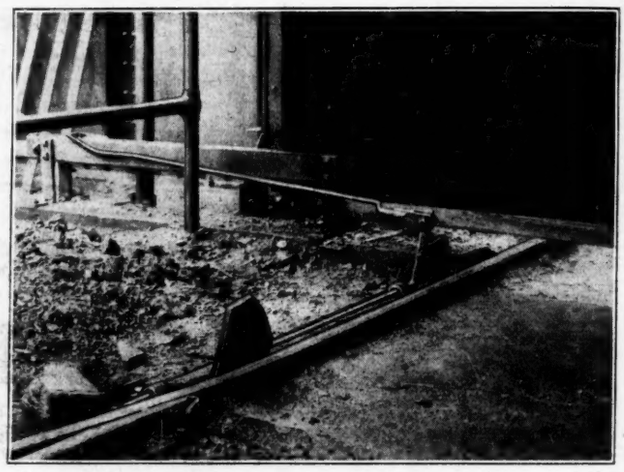


FIG. 4. SAFETY HORN BEFORE A SHAFT GATE

This horn is connected to the gate-opening mechanism in such a manner that the horn stands over the rail, effectively blocking cars from forward movement except when the shaft gate is open.

in the safety field has been the inventiveness shown by the members of the committee.

The method of instructing classes in first aid and mine rescue is different from the usual practice of extending the training period over six months. The course as given covers but one week of five evenings. Three hours are allotted to each evening. In this manner a greater amount of enthusiasm can be worked up, with the result that a greater percentage of the men who start the course finish it. The candidates for certificates are paid for the period of instruction, but not until after the termination of the instruction. That is, no man is paid who does not complete the course.

One first-aid and one mine-rescue team is trained from each of the mines yearly. More tangible results come from this system of instruction than where the training period is extended over a long interval. Too often do coal companies deceive themselves by attempting first-aid training in a more or less haphazard manner. In such cases first-aid meets are held as well as parades and banquets. All this looks well and gives an impression of keen activity, but more often this procedure does not signify as much as it might. The first-

aid and mine-rescue training period is long drawn out and by the time the men who are qualifying for certificates have completed the course they have had their interest in the work dulled to an extent that promises no appreciation of the problems that might arise in case of actual accidents.

If the mines are to be made safer, the officials must be quick to sense a potential source of danger. Too often the paths of least resistance are followed. In preference to eliminating the danger points these are allowed to exist and men are instructed in first-aid treatment, in order that accident victims may be given a chance for their lives, which should never have been risked in the first place.

A description of some of the practical safety devices that have been installed within the three mines of this company will show to some extent just why the State Department of Mines has selected this operator as one of the leading exponents of safe practices and has allowed it the full credit under the compensation law. All of the ideas and suggestions of which these devices are the outcome have been the direct result of the functioning of the central safety committee. No pretense is made toward seeking any material gain from the placing of any of these devices on the market. All have been patented, however.

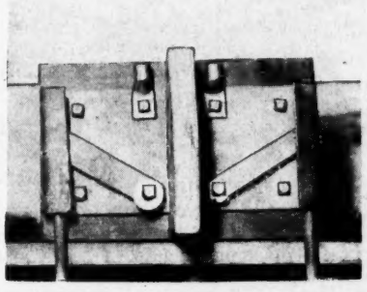


FIG. 5. MINING MACHINE CABLE ATTACHMENT
This device holds the cables securely in place yet releases them easily under proper manipulation.

M. S. Murray, safety engineer, and W. D. Thomas, superintendent of the No. 3 mine, are credited with the evolution of the ideas. Without exception, all of these devices can be made at the ordinary blacksmith shop. They are offered to the readers of *Coal Age* for adoption wherever there may be need for such equipment. They well illustrate the progress that can be made toward safer practices if a certain degree of concentration be given to the solution of the many problems that naturally arise from day to day in any mine.

What is believed to be the first locomotive ambulance ever constructed for underground service was recently installed within the Berry No. 3 mine. Two other machines of the same model are now under construction and when completed will be placed in the other two mines of the same company. The use of an ambulance underground in caring for injured employees is a decided innovation. Since all motor trips within the mines of the Ford Collieries Co. are dispatched by telephone from the mine-foreman's office near the shaft bottom, this ambulance is quite practical in event of an emergency. When an accident has been reported, a full right-of-way is assured for the ambulance along those portions of the mine track that will be traversed. From actual tests, any section of the mine can be reached within 15 min. An underground ambulance places mine accidents in a new light and it is a safe prediction that first-aid training will in the near future center around this valuable addition to first-aid equipment.

FIG. 6. CAGE APPROACHING GROUND LEVEL
The cam on the side of the cage is about to strike the roller on the vertical level, movement of which will open the shaft gate.

The frame of the ambulance is of 4-in. channel iron 10 ft. long and is mounted on pressed steel trucks which support it by means of cantilever springs. The machine is driven by a 5-hp. direct-current motor. The trucks are chain driven and so geared as to give a maximum speed of 7 miles per hour. Control is supplied through a mine-locomotive controller and a band brake.

FIGS. 7 AND 8. A MOVABLE POINT FROG
Cars frequently "pick" ordinary frogs. In this device the frog point swings with the switch points; therefore wrecks are few and far between.

Headlights, gong, trolley pole and seats for four complete the equipment proper. Upon the sheet-iron casing that incloses the moving parts and guards the wheels cleats have been placed so as to hold in position two

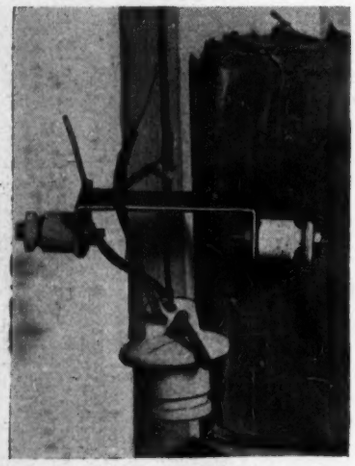
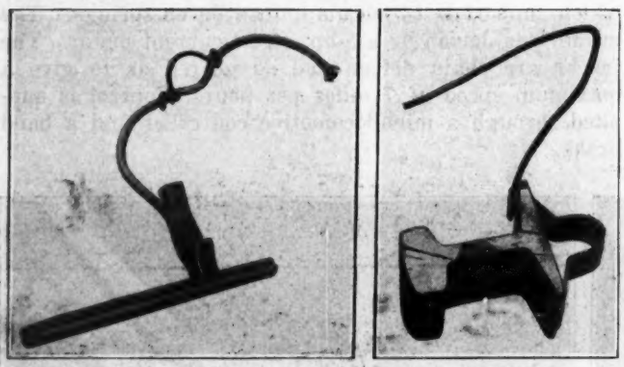


FIG. 9. BRACKET FOR SUPPORTING SMALL WIRES

By the aid of this bracket two telephone or light wires as well as feed cable, if desired, may be supported from one expansion bolt or lag screw set in a roof plug.

stretchers. These are provided with hoods to protect the face of the patient while he is being transported. Within a compartment of the ambulance body is a 20 x 26 x 6-in. galvanized-iron case containing two woolen blankets, one rubber blanket, splints, bandages, compresses, aromatic spirits of ammonia, iodine and absorbent cotton.

The ambulance is kept in a stall at the shaft bottom and a trained first-aid man is constantly available in case an accident is reported. The idea of attempting to establish first-aid stations throughout the mines has been abandoned. There is but one first-aid room underground, and this is located near the shaft bottom. This room is utilized for treating patients before they make the trip up the shaft. A switch off the main haulage road allows the ambulance to run directly into the room.



FIGS. 10 AND 11. WIRE ATTACHMENTS TO TROLLEY AND RAIL

These simple devices give much better results than the common practices of hooking the positive lead over the trolley and winding the return around the head of a track spike.

An ingenious shaft gate has been devised and installed at the ground landing of the main shaft. This is of simple construction and depends for its operation on the changing of the inclination of the track supporting the gate. A horn may be placed over one of the rails that lead toward the landing as is shown in Fig. 4. This latter device prevents any car from running into the gate when it is closed. When the gate is open the horn is not over the rail and no obstruction is present to prevent the passage of a car. Fig. 6 shows the cage suspended about 18 in. from the landing and about to make contact with the roller that operates the gate supports.

When the cage strikes the roller, its movement is transmitted through a series of rods, bellcranks, etc., to the tracks supporting the gates and their inclination is changed. The gates then open by gravity. The reverse of this action takes place when the cage moves down the shaft.

One of these gates has been in operation for three years and has required no attention during that period. There is no jar or shock in operation, which is the chief drawback with many shaft gates. One of the advantages of this gate is the fact that it can be constructed at the blacksmith shop. While it has been patented by

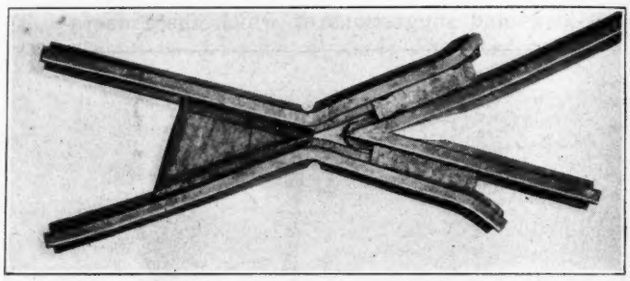


FIG. 12. A PLATELESS FROG

This frog has the advantage of light weight and the fact that any worn portion can be renewed independently of the others.

the inventor, W. D. Thomas, the mechanical principles involved are worthy of a more general use. No such gate is now on the market.

A movable-point frog was designed to overcome derailments which arose from cars with a short wheelbase "picking" an ordinary frog. Where there is difficulty in keeping the car wheels rigid and in proper alignment, the picking of a frog is more common than the picking of a switch. In construction, the frog point is so made as to extend onward from the point where the balls of the converging lead and transfer rails touch. This portion of the frog is separate and movable and pivots in its base. It is attached by connecting rods to the switch throw and conforms to the movements of the switch points. For a car traversing the curve and passing onto the straightaway while the switch is set for the straight, it functions like any spring switch, as

FIG. 13. SPECIAL FIRST-AID PACKET

First-aid packets are usually inclosed in tin containers that are liable to dent, thus injuring the contents. This packet is free from this defect.

there is a yoke and a pair of springs on the connecting rods which allow the frog to open and close.

One important factor of economy is introduced when a frog of this style is used and that is that no guard rails are needed. This appears to be an advantageous type of frog construction and particularly adapted to those points in a mine that receive the greatest amount of traffic. It might be mentioned that one of these frogs has been installed within the No. 3 mine at a place where over 900 cars pass daily. Before the movable point frog had been put in place there had been frequent derailments that averaged nearly one a day. However, since the new frog has been in place there has not been a single derailment. This is sufficient proof of the efficiency of the device.

A mining machine cable attachment has also been devised. This consists of two metal plates, each of which has one edge turned back upon itself for a distance of about 1 in. A groove has thus been formed for the contact of the cable leads. Both plates are mounted on a wooden block and each has a terminal attached for the reception of the positive and return wires. Fastened to each plate is a dog or grip, the face of which

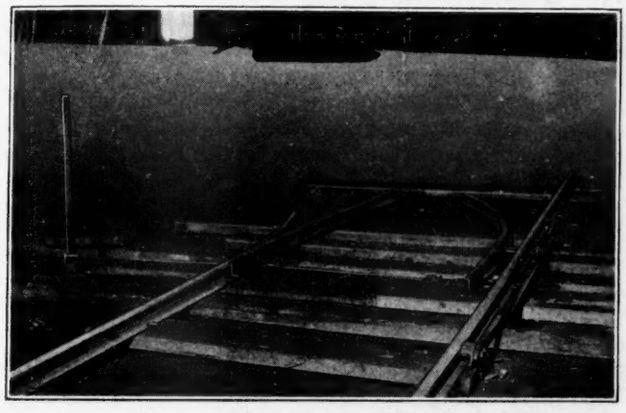


FIG. 14. SAFETY SWITCH USED ON ROOM PARTINGS
This is an ordinary spring switch with certain improvements. The switch remains open unless held closed.

is "V"-shaped and provided with teeth. These grips are so adjusted on the plates that they will always fall into the groove that has been made for the wire.

In making a connection, the cable terminals from the machine are placed in the groove of each plate. By a slight downward pull, the teeth of the grip are made to engage the cable and push it into close contact with the sides of the "V"-shaped groove. To disconnect, the cables are pushed upward and outward and drawn out quickly.

A bracket for telephone or electric light wires has been constructed as follows: A channel-shaped bracket made of strap iron and carrying two small insulators at the extremities is drilled at its middle point for the insertion of a lag screw that fits into a plug in the roof or rib. This effective method of supporting the wires has the advantage of carrying the wires at a uniform distance apart. Only one plug is needed for the support of both wires. By means of a hook, the eye of which is placed under the head of the lag screw, this arrangement can be made to support a lamp and socket by taking the stress of its support off the wires. If it is desired to suspend the wires from the rib, the eye of the hook is placed under the head of the lower insulator bolt.

For efficiently making a good connection from a trolley wire, a small spring clamp with an insulated handle may be used to advantage. The handle is composed of rubber or a composite substance and is attached to the spring by means of a screw. The wire is hooked around

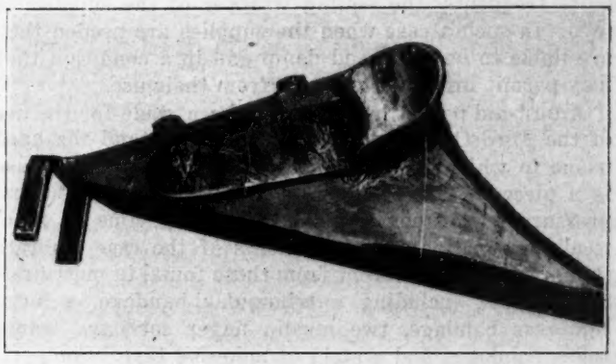


FIG. 15. A NEAT AND EFFICIENT CHOCK
A pair of these chocks are carried on each locomotive and will hold a car or a trip without the aid of sprags.

the screw between the handle and the clamp and held firmly by tightening the screw. When the clamp is in position on the trolley wire it is clear of the locomotive trolley wheel and is rarely displaced.

The rail-return attachment is a spring clamp that fits under and grips the base of the rail. It is attached by bringing pressure on the curved part of the clamp by hand. The return wire is placed between the edge of the rail base and the hook of the clamp. This wire is connected to the clamp and attached to the return wire by the usual splice. Both of these attachments can be easily made and give a better connection than that allowed by the usual practice of wrapping the positive wire around a hanger and the return wire around the head of a rail spike.

An unplated frog was constructed, so as to have all of the rigidity of a plated frog but lacking its weight. However, the chief reason for its use is an economic one, since it can be assembled at the point of installation and any defective part can be removed and another part substituted without lifting the whole frog. It consists of the usual point, straight and transfer rails, all of which are solidly joined together by channel irons bolted to the webs of the rails. Only one size of bolt is used on both fishplates and channel irons and only one wrench is necessary in assembling. As can be noticed in the accompanying illustration, any part of the frog can be removed by taking out four bolts.

FIG. 16. A SAFE SHOT-FIRING DEVICE
A quarter turn of the key terminal makes the connection and fires the shots; release or withdrawal of the key opens the contact.

An efficient first-aid packet also has been designed. Practically all of the packets of this kind on the market today are contained in a metal case. When these are supplied to the miners they are usually carried in a hip pocket. In a short time the case is bent and dented and quite frequently the sealing wrapper of the supplies is torn. In such a case when the supplies are needed they are liable to be dirty and damp and in a condition that may permit infection to result from their use.

A first-aid packet has therefore been made for the use of the Ford Collieries Co. that will withstand the hard usage to which it is subjected by the miner. The case is a piece of tire casing that will conform to unusual pressure made upon it and at the same time be practically waterproof. The contents of the case embrace items somewhat different from those found in most first-aid packets, including a triangular bandage, a large compress bandage, two muslin finger cots, two gauze roller bandages and a strip of adhesive tape. Compactness has been sought in the size of the case. The supplies are adequate for any ordinary injury, yet as a rule do not include more materials than can well be utilized.

A Safety Switch for Room Partings

As may be noticed in the accompanying illustration, the safety switch for use on room partings here employed is a standard spring switch with certain additions or attachments. A spring has been added to the straight point which keeps the switch set for the open unless intentionally held for a curve. Two levers have been attached, the extremities of which lie a little above the rail and parallel to it, the opposite ends being joined loosely. One of these levers is provided with a downward-projecting lug that drops into a recess in a plate that is attached to the end of the bridle bar when the switch is thrown for a curve.

The switch point butts are nicked near the end of the base on the inside and are placed in chairs which have a rivet that engages this nick. The butts are then held in place by "V"-shaped channels which are driven between the curves and the straight rails. A spike is placed behind each channel to keep it in place.

When it is desired to pass a trip of cars onto the curve, the switch throw lever is pulled over until the curve point is against the rail. When the trip has passed the lever is released. The switch is then made to assume the position for the straight by the first car passing along the straight track. The throw is made by the wheel depressing one of the levers and allowing the spring to function.

The old adage that "Neatness is an outward sign of inward efficiency" becomes more and more apparent around coal mine plants. A frequent sight underground is the promiscuous scattering of props and sprags along haulage roads. Heretofore there has been a certain degree of method in this madness, although the method has been woefully inefficient. If a motorman desires to block a trip of loaded cars on a grade, he commonly hunts around for sprags to throw into the car wheels or as a last resort places a post across the track. By the use of a simply-constructed device there will be no need for cluttered haulageways in those mines that do not use brakes on their cars.

This device consists of a triangular block of wood that has one face curved to fit the face of a car wheel. An iron handle is attached to the block and an iron clip or bracket that fits around the flange of the wheel. One extremity is fitted with a fork to hold the chock on the rail. Two of these blocks are carried on each locomotive and are used in making up a trip or in blocking a trip inside of a door. The necessity for finding a sprag or using any available piece of timber thus has been overcome.

Many shot-firing devices are available today, but it is doubtful if any combine more practical features than the one used in these mines. This is composed of a small box that contains two contacts for the current and a rotor on a broken shaft, one end of which is square. The rotor is held in a non-contact position by a spiral spring. The apparatus in its entirety depends for current upon a cap-lamp battery or an ordinary dry cell.

Wideawake Safety Committee Gets Results

To operate it the terminals of the lead or shot-firing wire—one end of which is a square key—are placed upon the ends of the rotor shaft. The key terminal is given a quarter turn, which is sufficient to bring the contact points of the rotor in touch with the contact points of the current supply, thus firing the shot. When pressure is removed from the key the shaft will rotate in a reverse direction under the action of the spring and assume the non-contact position, thus making accidental contacts impossible.

The practical devices here described show quite clearly the results of a wideawake central safety committee. It is doubtful if many other such committees that have come into existence under the compensation laws can show the same tangible results of conscientious effort as this one. After all, it is not in "getting by" that progress is achieved, but only through honestly seeking a definite goal. From the success that has attended the initial efforts of this company, it has been spurred on to even greater ones.

Numerous other safety devices that go hand in hand with more efficient operation are under construction by this company and will be taken up at a later date in *Coal Age*. For the present, this article, it is hoped, will demonstrate the parcticability of the plan pursued and encourage other companies to make the competition keener. As to the number of fatal accidents occurring in the three mines of the company during the past two years, there has been but a single one. This was the death of a man on the surface who had been trimming cars underneath the tipple. It was purely accidental as the facts in the case prove. One fatality for approximately 3,000,000 tons of coal is a record of which any company might well be proud. This is sufficient cause in itself for the allowing of the full 40-cent credit. More and more does coal mining cease to be a gamble with death.

Wholesalers Will Consider Coal Reconsignment Charges

The annual convention of the American Wholesale Coal Association is to be held in Pittsburgh June 1 and 2. The program has not been outlined as yet, but reconsignment charges will be an important feature of the discussion at the convention. At the same time plans will be perfected for a formal presentation of the reconsignment matter to the Interstate Commerce Commission. The Executive Committee of the American Wholesale Coal Association will meet in Chicago April 15.

Some Methods of Suspending Electric Power Cables

Power Cables in Many Instances Must Be Suspended in Bore Holes or Shafts—They Can Be Supported from the Top Only and Auxiliary Carrying Cables Sometimes May Be Necessary

BY R. P. HINES
Fairmont, W. Va.

IN ORDER to transmit electric energy from the surface into a mine, cables are extensively used. The type of cables to be employed, of course, depends upon the exact purpose to be served. Some of their main uses are for supplying underground transformer, synchronous-converter or motor-generator substations, alternating-current, motor-driven centrifugal or reciprocating pumps, alternating-current motor-driven hoists, and to feed the usual direct-current distribution circuits throughout the mine.

Various transmission voltages and systems are employed and the cables used therefor embrace bare cables (usually employed for the negative conductor in grounded direct-current systems) as well as those with various degrees of insulation, to suit the voltage of the system on which they are used, and which may be either

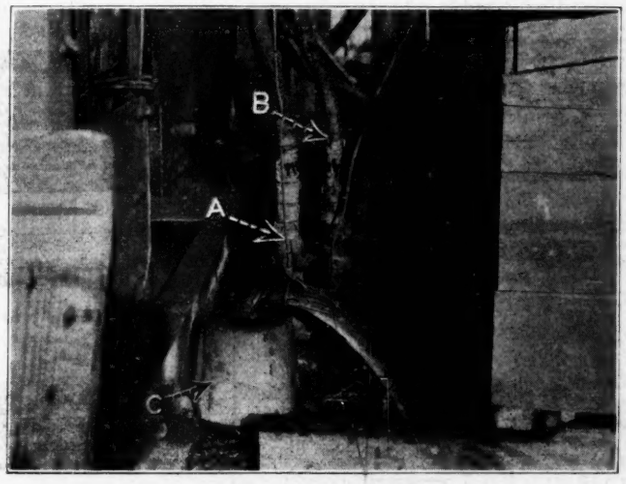


FIG. 1. THREE CABLES CARRIED DOWN THE SAME SHAFT
Two of the cables, *A* and *B* are held by clamps, the third cable is threaded through a cast-iron block, the strands spread, and spelter, or solder, poured around them. This method is applicable only for bare cables at earth potential.

single- or multi-conductor. Only methods of suspending cables vertically in shafts and bore holes will be here considered. The mechanical make-up of such a cable will of course be influenced by the depth of the shaft or bore hole, but within the range ordinarily found in most bituminous coal mines no special or unusual features are required to obtain the necessary mechanical strength.

The usual types of cables employed may be classed as follows: Class I—Single conductor cables, (a) bare; (b) insulated, braid covered; (c) insulated, lead covered; (d) insulated, lead covered, wire armored. Class II—Multi-conductor cables, (a) insulated, braid covered; (b) insulated, lead covered; (c) insulated, lead covered, wire armored.

One or more methods of suspending such type of the different varieties of cables under the two general subdivisions as above will be described, while the illustrations accompanying this article show typical suspensions for some of the different classes.

In considering single-conductor, bare cables, it will be found that they, in general, possess sufficient mechani-

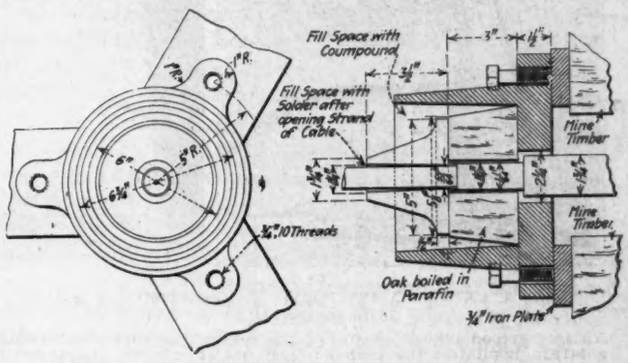

Fill Space with Coumpound
Fill Space with Solder after opening Strand of Cable
Mine Timber
Mine Timber
Oak boiled in Paraffin
¾" Iron Plate

FIG. 2. INSULATED CAST-IRON BLOCK SUSPENSION
This is a modification of *C*, Fig. 1, adapting it to cables carrying appreciable voltage. The cast-iron block into which the cable is soldered is insulated from its surroundings.

cal strength to carry their own weight with a considerable factor of safety. Of course, engineers' opinions vary regarding the safety factor necessary. This feature is determined therefore largely by the opinion of the engineers responsible for the installation. Inasmuch as where bare cables are used they are almost invariably employed for the negative conductor of a direct current grounded system, these cables are at the potential of the earth, and it is not necessary to provide means of insulating them from the ground either at the point of suspension or elsewhere.

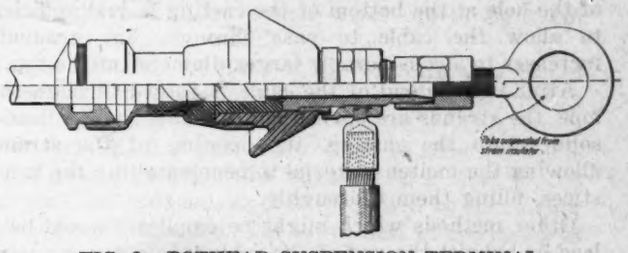
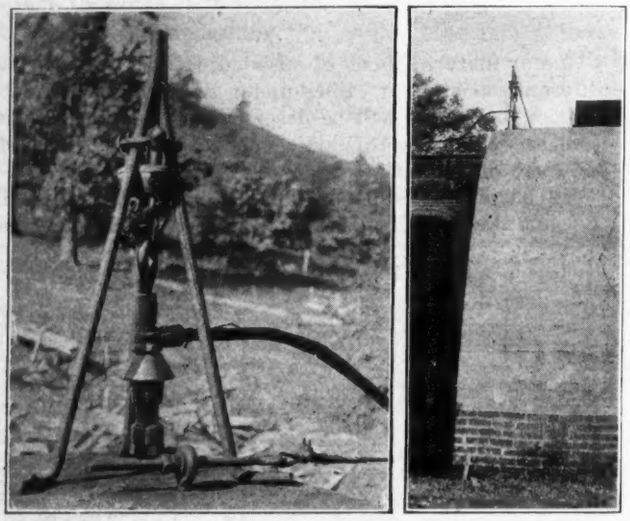


FIG. 3. POTHEAD SUSPENSION TERMINAL
Since the eye of this device is "alive," that is, at the cable potential, its support must be insulated. This is accomplished by means of a strain insulator.

This renders the problem of supporting them at the point of suspension by clamps or other means a comparatively simple one. A method similar to that shown at "a" (Fig. 1) has proved satisfactory during several years of service. The conductor is suspended in a fiber conduit placed in the concrete side of a shaft. The clamp

in Fig. 1 shown attached to an insulated armored cable, but which works equally well upon a bare conductor, is of cast iron split in two parts, similar to the one shown in Fig. 8, and is arranged to bolt tightly around the cable, the clamp being bored out to just the right diameter to firmly grip the conductor when the eight bolts are drawn up.

The lower end of the clamp is provided with a flat bearing surface to rest on the top of the pipe, or bore hole casing, and has a round projecting element extending below the flat portion. This projection is turned



FIGS. 4 AND 5. A POTHEAD SUPPORTED ON A FAN HOUSING

An iron tripod placed on top of the fan-casing supports, through a strain insulator, the pothead terminal of a cable suspended in the air shaft.

down so that its outside diameter is such as to just allow it to fit snugly inside the conduit. This clamp is about 18 in. long and is designed to give a large contact area for gripping the cable. At "c" (Fig. 1) is shown a method which is extremely simple. The conductor in this case is a 1,000,000 circular mill, 61-wire concentric-strand cable and is suspended in a 4-in. inside diameter fiber conduit, imbedded in the concrete side of the shaft, the depth being 517 ft. The clamp for holding the cable at the top consists of cast iron in the form of a truncated cone, having a tapered hole through the center. This casting is 10 in. in diameter at the bottom, 8 in. in diameter at the top, and is 8 in. high. The diameter of the hole at the bottom of the casting is just sufficient to allow the cable to pass through, but gradually increases to a considerably larger diameter at the top.

After the top end of the cable is passed through this hole, the strands are opened out and babbitted or leaded solidly into the casting, the opening of the strands allowing the molten material to penetrate into the interstices, filling them thoroughly.

Other methods which might be employed would be to lead or babbitt the end of the cable into a regular wire-rope socket eye, such as is commonly used with steel hoisting cables, or to employ the two eye halves of the regular feeder-cable clamp. Neither of these two methods has ever been used by myself, although each is entirely feasible.

In considering methods for suspending cables of the insulated, braid covered, single-conductor type, since these cables are practically always at considerably above earth potential, it will be necessary to provide suitable insulation between the ground and the clamp used, in case the clamp is in contact with the metallic portion of the cable. In case the clamp is applied over the insulation and braid no additional insulation will ordinarily be required. For use where the clamp is in contact with the metallic portion of the cable, the method illustrated in Fig. 2 may be used. This is an amplification of the method shown at "a" (Fig. 1), in that means of insulating the clamp proper from the ground is provided.

The means of suspension consists of a cup-shaped casting which is placed over the bore hole and which may be bolted to the concrete in which the casting is imbedded. A block of suitable impregnated wood or other insulating material is placed between this cup-shaped casting and the cone-shaped cast-iron block, which is fastened directly to the metallic part of the cable. The outer braid and insulation are removed from the cable near the upper end, in sections, as indicated, and the bare cable passed through the hole in the cast-iron block. The strands of the cable are then opened and filled with solder or babbitt metal. This fastens the cable securely in and to the casting, which rests on the insulating block in the cup-shaped casting.

The space between the insulating block and the wall of the cup-like casting is filled with the regular type of insulating filling compound generally used to fill end bells on cables. This is a semi-liquid substance, which is readily poured when heated but assumes a semi-solid plastic condition on cooling. Another method of suspending a cable of this type, and embodying both a support and a pothead or terminal, is shown in Fig. 3. It is believed that the cut will be practically self explanatory, except that it may be specially pointed out that the top ring or eye bolt, being in contact with the metallic core of the cable, will be "live," and suitable strain insulators should be inserted in the stranded guy cable or other means employed to support this eye. The photographs, Figs. 4 and 5, show a suspension of this type, indicating clearly the strain insulators.

For use in cases where the clamp is applied over the

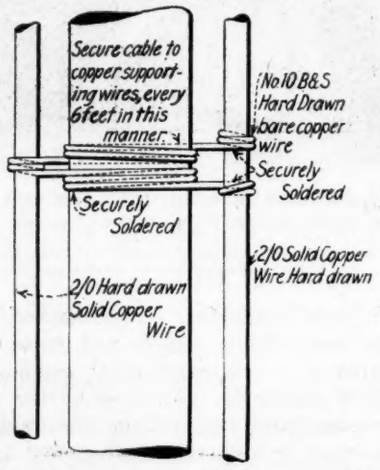

Secure cable to copper supporting wires every 6 feet in this manner
No 10 B&S Hard Drawn bare copper wire
Securely Soldered
Securely Soldered
2/0 Solid Copper Wire Hard drawn
2/0 Hard drawn Solid Copper Wire

FIG. 6. A POWER CABLE AND ITS SUPPORTING WIRES

Where vertical cables are too long to sustain their own weight auxiliary wires may be attached to the cable at suitable intervals. These wires take much of the weight off the main conductor.

insulation and braid the type of clamp as already referred to and shown at "a" (Fig. 1) is suitable, but must be accurately bored out, so that sufficient pressure on the core of the cable to support it may be obtained, yet not enough applied to damage the insula-

tion. In suspending lead covered cables, as included in class 1, the added weight of the lead covering and means of satisfactorily supporting it must be considered.

Although the method of support already referred to and shown in Fig. 3 is designed primarily for non-lead-covered cables, it may be used without modification for cables so sheathed where the length of the cable is comparatively short. In such a case the lead sheath will not have to be separately supported. This type of support used with a lead-covered cable suspended in an air shaft about 140 ft. deep is shown in Figs. 4 and 5, already referred to. The iron tripod from which the special clamp and end bell are suspended is set on the top of the wind box from the ventilating fan, built over the air shaft, in which the cable hangs. The entire weight is carried by the clamp.

When using lead-covered cables in deeper shafts or bore holes it is necessary to support the lead sheath separately and a usual method is to lash the cable to two or more copper or steel supporting strands. These are fastened to the cable by a wrapping of several turns of wire carefully soldered, the wrappings being spaced every 15 to 25 ft. (See Fig. 6.)

Another type of suspension for lead-covered cables is commonly called the "sheave wheel" method. A standard sheave wheel, such as is usually employed for hoisting cables, is carried between suitable bearings on a timber or steel framework erected over the shaft or bore hole. The cable is passed one or more times over the sheave wheel and the free end is lashed to the side of the cable emerging from the mine. This is done to prevent the cable from slipping back over the sheave.

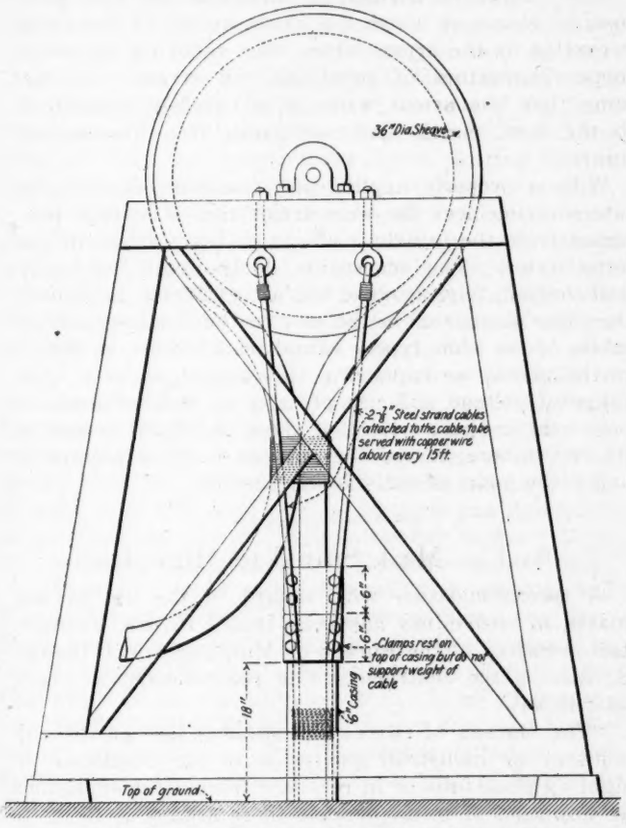

36" Dia. Sheave
2-⅞" Steel strand cables attached to the cable, to be served with copper wire about every 15 ft.
Clamps rest on top of casing but do not support weight of cable
6" Casing
18"
Top of ground

FIG. 7. SUSPENDING A CABLE FROM A SHEAVE
The cable is passed one or more times around a sheave, then lashed to itself. Clamps and auxiliary supporting wires or cables may also be used to advantage.

In the case of heavy or long cables additional safety may be obtained by fastening the cable every 15 or 20 ft. to steel supporting strands, which are in turn connected to the frame supporting the sheave wheel. Adjustable bolts, eye bolts or turn buckles should be used with the steel strands in order to properly take up the stress. This type of suspension is shown in Fig. 7.

Conductors of the 1-d class mentioned above consist of lead-covered cables, over the lead sheath of which there is placed a bedding or layer of asphalted jute, and over this a spiral wire armor. Over this armor there is usually, though not always, a layer of asphalted jute, to protect the armoring wires as much as possible from corrosion by the acid mine water and air.

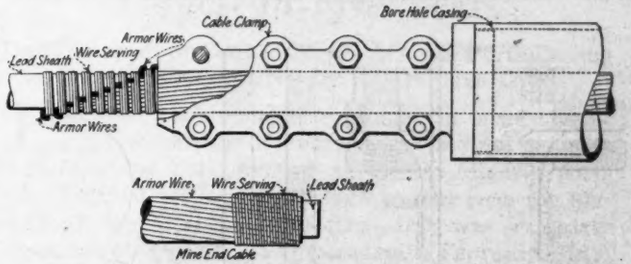


FIG. 8. A CAST-IRON CLAMP ON AN ARMORED CABLE
The clamp fits around the cable, grips it tightly and rests upon the top of the bore-hole casing. The armoring wires may be brought out of the insulating sheath and bent over hook-shaped.

Cables manufactured especially for vertical suspension in shafts and bore holes and called by most cable manufacturers bore-hole cables, are included in this classification. Bore-hole cables are armored with galvanized steel wire, the same as submarine cables, except that one of the wires of the armor is omitted, so that when the service of the armor wire is put around it (which is done while it is in the process of armoring and under tension) it compresses the armor so as to grip the cable tightly, and as this wrapping or serving of armoring wires is placed around the cable every 25 ft., there is no danger of the cable slipping out of the armor.

These cables are designed so that the total weight may be safely carried by the armor wires. The upper end of the cable is so finished as to permit its easy suspension. A wrapping is placed over the armor wires, which are brought out at different points and bent over in a hook. A clamp designed to grip the cable tightly, and also to support it by the wrapping resting on it at the top, is used. This clamp and also the method of finishing the armoring at the end of the cable is shown in detail in Fig. 8. Figs. 10 and 11 show an installation of this type, except that all the armor wires are brought out and bent over at one point.

Another method of supporting wire-armored cables is sometimes used, in which a clamp somewhat resembling two pipe flanges is employed. This has a hole in the center of proper diameter to allow the cable to just pass through. The edges of this hole in the lower half are rounded, so that there will be no cutting or abrading of the cable. The lower half of the clamp is placed over the cable, then the armor wires are untwisted and bent out over the clamp radially.

The upper half of the clamp is then placed over the cable and the two halves tightly fastened together by means of bolts, thus clamping the armor wires securely between the two halves. The ends of the armor wires are then usually bent down over the outer rim of the clamp. This clamp rests on the end of the bore hole casing, thus supporting the cable, practically the entire

weight being carried by the armor wires. Fig. 9 illustrates the clamp in detail.

We next come to the multi-conductor cables, and in considering the methods for their suspension it will be found, generally, that the means employed for the different subdivisions of single-conductor cables may be adapted to give satisfactory results when employed with multi-conductor cables of the same subdivisions or general construction. Due to the fact that the single-conductor cables are most commonly used on circuits of low or medium voltage and multi-conductor cables on high voltage circuits, the cross-sectional area of the conductors in the first class will be considerably larger than those in the second class.

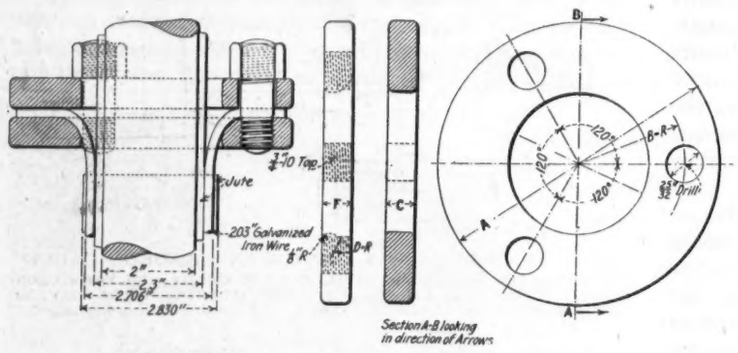
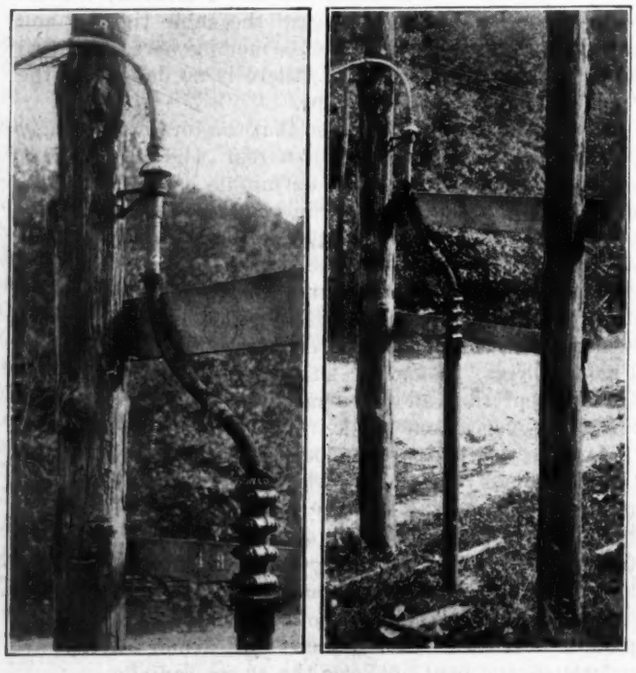


FIG. 9. DETAILS OF A FLANGE CABLE SUPPORT

The armoring wires are unwrapped and brought between the two flanges, which are then drawn tightly together with the bolts. The cable is thus supported by its armor.

For suspending multi-conductor, braid-covered cable, a clamp of the type already described and illustrated in Fig. 1 and in Fig. 8 for single-conductor cables of this same construction will be entirely satisfactory in shafts and bore holes of moderate depth, where the weight of the cable is not such as to require a pressure from the clamp in excess of that which might be applied without injury to the braid covering or other insulation. In deeper shafts and bore holes some additional means of support may be employed, such as two steel strands lashed to the cable by wire wrappings at frequent intervals. The sheave-wheel method would also undoubtedly be satisfactory where the depth of shaft or bore hole was not excessive.



FIGS. 10 AND 11. A POWER CABLE INSTALLED IN A BOREHOLE

This is a clamp support placed upon the borehole casing. The casing rises three to four feet above the ground to prevent the entrance of rain or snow.

For lead-covered multi-conductor cables most of the methods of suspension adaptable to the corresponding type of single-conductor cables are applicable. Among these are: the sheave-wheel type, either with or without the additional supporting strands; the four-bolt clamp, as per Fig. 8 (especially for moderate depths), while in some cases supporting strands only may be employed something after the idea shown in Fig. 6.

Cables of the lead-covered, wire-armored type are usually considered by most engineers and cable manufacturing companies as the conductors "par excellence" for vertical suspension in shafts and bore holes. In a properly designed and constructed cable of this type the matter of suspension is an easy one, since excellent devices are available for this purpose, by means of which the whole weight of the cable is carried by the armor wires, thus relieving the main copper conductors of practically all stress. At the same time the armor wires give excellent protection to the lead sheath and conductors from mechanical injury.

With a properly applied and compounded asphaltic jute covering over the wire armor this is in turn protected from the injurious effects of the sulphur in the mine water. The suspension of the multi-conductor lead-covered, wire-armored cab'es is effected in exactly the same manner as in the case of the single-conductor cables of the same type. Actual installations, as shown in the photos accompanying this article, cover a wide range of voltage and size of cable as well as depth of bore hole or shaft. Each of these installations has, in its own sphere, served the purpose in hand admirably and given years of satisfactory service.

No Gas Mask Suited to Mine Use

A recommendation with regard to the use of gas masks in coal mines has been issued by the Committee on Safety of the Bureau of Mines, of which George S. Rice is the chairman. The recommendation reads as follows:

"The Bureau of Mines disapproves the use of any military or industrial gas mask so far developed, in fighting mine fires or in recovery work after explosions in any kind of mine, because there always is likely to be carbon monoxide present, or a deficiency of oxygen existing, or both. Self-contained oxygen breathing apparatus should be used under these conditions."

Seasonal Rate Bill in House

A bill identical with the measure introduced in the Senate by Senator Frelinghuysen, providing for seasonal railroad freight rates for the shipping of coal, has been introduced in the House by Representative Cooper of Ohio.

"Agglutinating Curve of Coal"

Laboratory Experiments Disclose Interesting Characteristics in the Coking Properties of Coal When Mixed with Inert Material

BY BYKEM

AN ARTICLE discussing the effect on the coking agglutinizing properties of coal when mixed with varying proportions of inert material is printed in the English *Gas Journal*, vol. CXLIX, No. 2961 (Feb. 10, 1920, p. 313), under the title—"The Agglutinating Curve." In the experiments described the inert materials employed consisted of sand, anthracite and carbon. The influence of the degree of fineness of the inert substance was studied and reference was made to the "agglutinating curve," showing "the proportion of inert material of varying degrees of fineness a particular coal could sustain and still yield coherent coke." These curves are not included in the published article. Pulverized electrode carbon is recommended as the best inert substance for this test. Coke buttons were obtained by the standard American method for determining volatile matter.

After reading the article referred to, in order to observe more closely this interesting behavior of coal, numerous coke buttons were prepared in the laboratory on three different coals. These tests were undertaken to determine: (1) The maximum per cent of inert material which could be blended with the different coals; (2) the influence of the degree of fineness of the inert material; (3) the crushing strength of the buttons obtained; (4) the agglutinating curve, plotting the per cent of inert material against the crushing strength.

The coals selected were samples of Pocahontas, eastern Kentucky and Illinois coals. All the coals passed a 40-mesh sieve, no effort being made to secure a definite size. The inert materials used were pulverized electrode carbon passing 100 mesh, and sand passing 40 and remaining on 60 mesh, also sand passing 100 mesh.

The maximum proportion of carbon which could be used was found to be 80 per cent. The resulting Pocahontas and Illinois buttons could be easily crushed with the fingers. The Kentucky button was considerably harder than the other two. The results obtained with 50-mesh sand were quite similar to those just described, except that the buttons were somewhat harder. With 100-mesh sand the buttons were somewhat more fragile.

With 80 per cent of 100-mesh sand the Pocahontas and Illinois buttons were practically powders and the Kentucky button was easily crushed with the fingers. In this latter case the Pocahontas button was slightly more coherent than was the Illinois button. In all other cases the Illinois buttons appeared to be as coherent, under similar conditions, as the Pocahontas buttons. One Pocahontas button containing 20 per cent of 200-mesh sand which was made was easily crushed with the fingers.

Efforts were made to determine the crushing strength of the various series of buttons obtained, but no satisfactory method could be devised. Some of the poorest buttons sustained a weight of about 70 grams, while an Illinois button containing 20 per cent of electrode carbon sustained a weight of 66 lb. Since the crushing strengths of these coke buttons were not determined agglutinating curves could not be prepared.

Conclusions reached were as follows: The limiting proportion of inert substance is the measure of the agglutinating value of a coal. This value differs for different inert substances, and decreases with increase of fineness. Hence a given inert material of a definite fineness should be used in comparing all coals in order to secure concordant results.

February Tidewater Shipments Largest in Five Years

Daily Cargoes of Coal to North Atlantic Ports During Month Averaged Nearly 100,000 Net Tons

TIDEWATER shipments continued in large volume during the month of February. The total quantity of bituminous coal dumped at North Atlantic ports was 2,899,000 net tons. Although smaller than the tonnage of January—3,185,000 tons—this was at nearly the same rate per day. Compared with February, 1919, the month showed an increase of 362,000 tons, or 14 per cent. In fact the movement was the largest attained in any February during the last five years. The total amount dumped during the first eleven months of the present coal year was 35,692,000 net tons. Compared with the preceding coal year (1918-1919) this was a decrease of 4,109,000 tons, or 10 per cent.

BITUMINOUS COAL SHIPPED TO TIDEWATER
(Net tons)

	Coal year 1919-20	Coal year 1918-19
December	2,036,000	3,206,000
January	3,185,000	2,954,000
February	2,899,000	2,537,000
Coal year to Feb 29	35,692,000	39,801,000

Coastwise shipments to New England during February were reported as 793,000 net tons, as compared with 804,000 tons in January. Although smaller in total quantity, the February movement was thus at a higher rate per day, in fact at the highest rate since December, 1918. The cumulative shipments to New England for the coal year, which began April 1, 1919, are far behind the record of the preceding coal year, 8,218,000 tons as against 13,883,000 tons.

BITUMINOUS COAL SHIPPED TO NEW ENGLAND VIA TIDEWATER
(Net tons)

December	674,000	876,000
January	804,000	721,000
February	793,000	554,000
Coal year to Feb. 29	8,218,000	13,883,000

Overseas exports during February were 718,000 net tons, a decrease of 179,000 tons, compared with January. Exports fell off sharply at Philadelphia and Baltimore, and decreased at Hampton Roads. Exports from Charleston, however, rose from 29,000 to 64,000 tons, viz.:

	January	February
New York	.....	.....
Philadelphia	103,000	43,000
Baltimore	174,000	58,000
Hampton Roads	591,000	553,000
Charleston	29,000	64,000
Total	897,000	718,000

Records of Coal Commission Go to Bureau of Mines

President Wilson has issued an executive order transferring all records and files of the Bituminous Coal Commission to the custody of the Council of National Defense. On June 30 they are to be turned over to the Bureau of Mines for consolidation with the files of the Fuel Administration.

Breaker-Chute Linings That Last

Vitrified Clay Pipe Makes a Lining That Will Outwear Twenty Ordinary Linings of the Iron-Sheet Variety, with Practically the Same Cost of Installation

BY DEVER C. ASHMEAD
Tarrytown, N. Y.

ORDINARY blue-annealed sheet iron used in the lining of breaker chutes wears out so quickly that several coal companies have been investigating other materials for lining the chutes in their breakers. In the issue of *Coal Age* for Feb. 19, 1920, I called attention to the use of galvanized sheet iron, underground and in the breaker, describing its advantages over the use of blue-annealed sheet iron. Since that article was written I have had the opportunity of examining another lining for breaker chutes which seems to have some advantages over the galvanized sheet iron, especially in troughs of smaller cross-section.

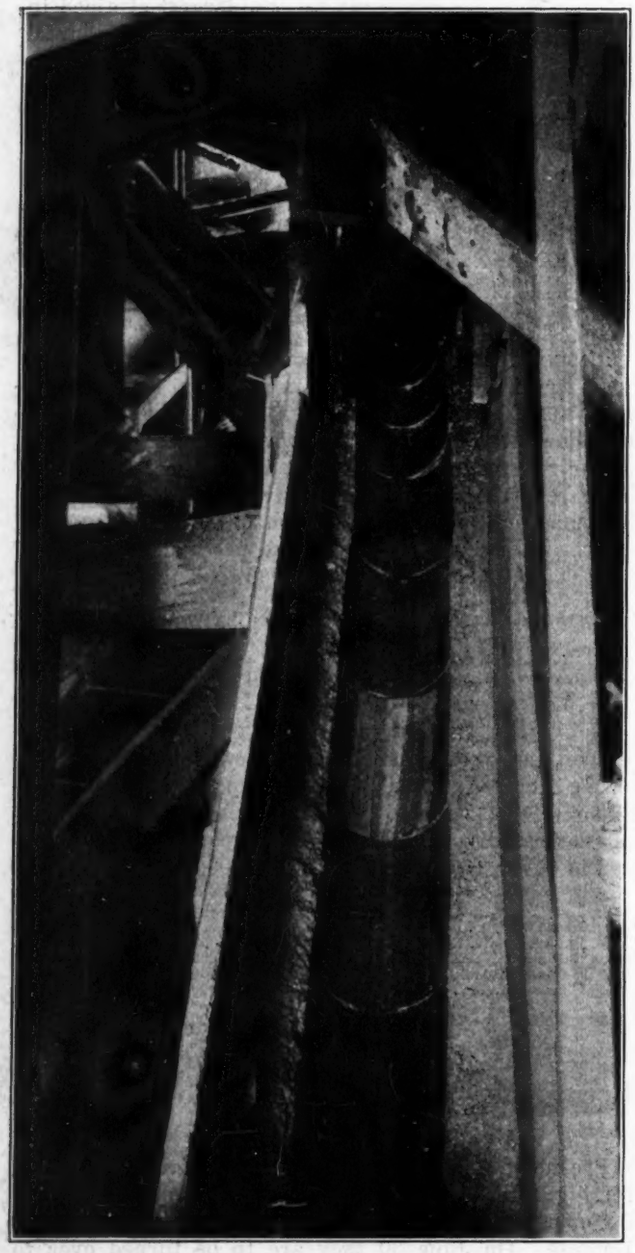


FIG. 1. VITRIFIED CLAY-LINED CHUTE
A 50-ft. chute from the hopper to shaker screens which carries all the fine coal produced in the breaker. This chute has been in service for two and one-half years without renewal of lining.

At the breaker of the Mt. Jessup Coal Co. near Peckville, Pa., the company has been using vitrified clay pipe for the lining of small chutes, and remarkable results have been obtained, particularly as concerns the life of the lining.

As an example, in one of its breakers the company has two chutes lined with vitrified clay pipe. These chutes are each between 40 and 50 ft. long.

One chute carries all the coal in the breaker under pea size, as well as half of the pea coal. The coal drops into the chute from a hopper, the fall being about 3 ft. The material thus lands directly on the clay lining. From this point the coal is carried by the chute a distance of about 50 ft. to a set of shaker screens for sizing. For a period of two and one-half years this lining has been in place, has given continual service and has not been renewed or repaired. At the present time it shows comparatively little wear, indicating that its life will be as long again. This chute with its lining is well illustrated in Fig. 1.

The other chute, shown in Fig. 4, which carries rice coal to a pocket, does not handle as much material as the one just described nor is it quite as long, having a length of only about 40 ft. It will be noted that near the lower end one of the pieces of the lining is broken. This section was broken accidentally, and the company has not as yet procured the proper size of pipe to replace it.

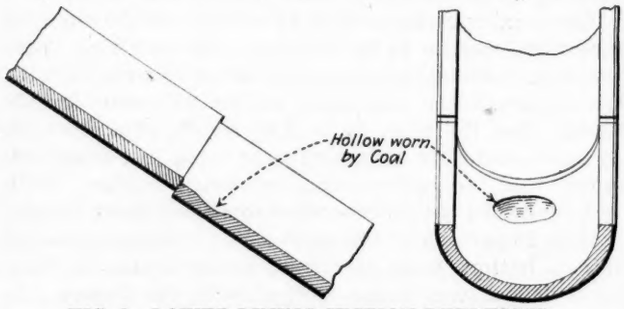


FIG. 2. LOWER LINING SECTION DEPRESSED
This arrangement of lining parts results in unnecessary wear in the lower pipe length.

In a short time the coal company intends to line with vitrified clay pipe all the chutes handling the small sizes of coal, since by experience so far it has found that such a lining will last at least ten times as long as will a lining of blue-annealed sheet iron, while present indications are that it will outwear twenty linings of the iron-sheet variety. From two chutes in this breaker that have been lined with the vitrified clay piping the coal company has received 24 and 30 months of wear, respectively, whereas linings handling the same character of material, and much less of it, but composed of blue-annealed sheet iron have to be renewed every two or three months.

The first cost of the two types of lining was approximately the same, and there is practically no difference in the expense of installation. The cost of upkeep, however, in the case of the clay pipe is much less than that for the sheet iron. The only outlay for upkeep with the clay-pipe lining is when some accident occurs whereby one or more sections are broken. No attention is required after the first installation of the vitrified clay pipe, but with the sheet iron constant attention is necessary as wear is rapid, and the lining must soon be replaced. The Mt. Jessup Coal Co. estimates that it has to reline its sheet-iron chutes on an average once every three months.

Vitrified clay pipe lining is nothing but a good grade

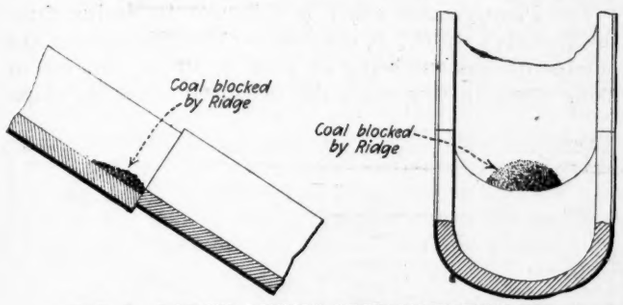


FIG. 3. LOWER LINING SECTION ELEVATED
This results in a tendency to block the chute, with heavy wear on the protruding edge of the lower section.

of sewer pipe with the bell end removed and the pipe cut in two lengthwise. At times the coal company has had to purchase the pipe whole and do the cutting itself, but upon other occasions it has been able to secure it already prepared for use. When the pipe has been received whole and has had to be cut this work has been done with a diamond-pointed chisel.

Great care has to be taken in the installation of the vitrified clay pipe in the chutes to see that the joints, which come about every 2 ft., exactly match. The lower end of the upper section should not be higher than the upper end of the adjacent lower section. If they should not match and the upper one be higher than the one below, the constant passage of coal over this slight drop will have a tendency to wear a hollow in the lower joint of pipe. This is shown diagrammatically in Fig. 2.

By referring to Fig. 4 it will be noticed upon close examination that there are little hollows below a number of the joints. These were caused by the above-described process. Inequality of lining makes a point of wear that could have been prevented if the joints had been properly matched. No matter how close an examination is given to Fig. 1 no hollows will be found, as these joints match accurately, except one or two at the upper end of the chute, where the chute makes a vertical bend. This vertical bend also makes the chute appear in the illustration to have a horizontal curve, but this appearance is only an optical illusion, since the chute lies in a vertical plane throughout its entire length.

If the condition is exactly the reverse of that assumed above and the lower end of the upper joint of pipe is lower than the upper end of the adjacent lower joint, a ridge is formed in the trough or chute which will have a tendency to retard the material as it flows downward. If the chute has only a slight pitch this will tend to stop the coal and possibly clog the chute. This case is illustrated in Fig. 3. In this instance if the retardation of the coal is not sufficient to block the chute this ridge becomes a point of wear and may considerably decrease the life of the lining.

As far as its experiments have gone in the use of vitrified-clay pipe lining, the coal company has come to

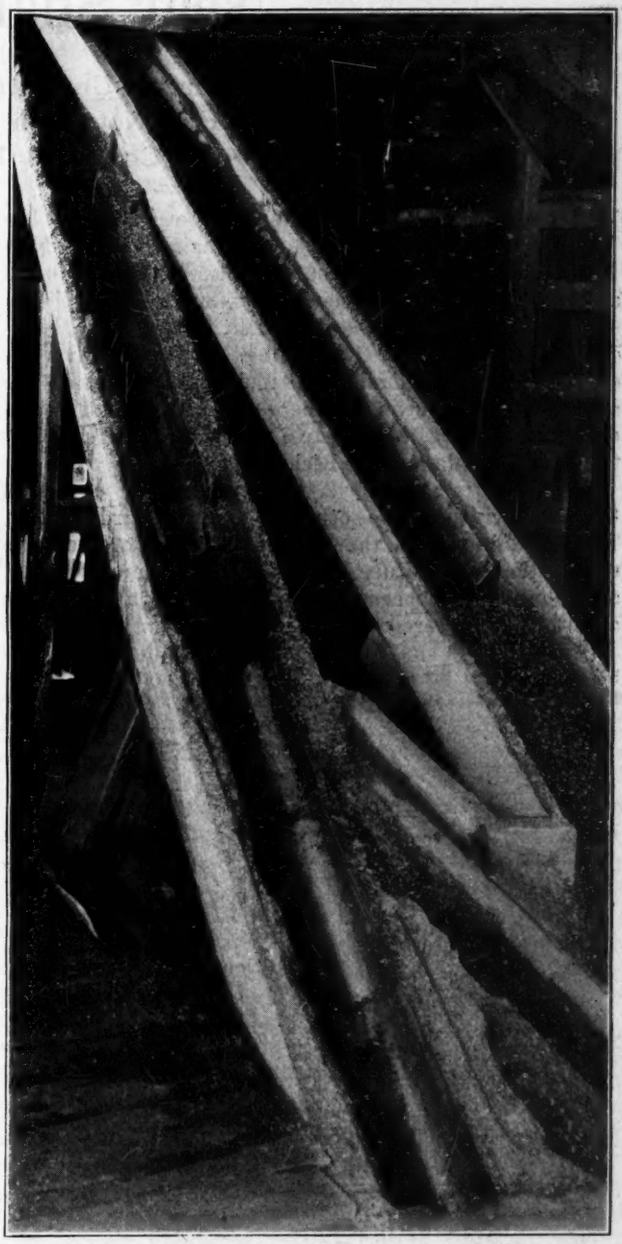


FIG. 4. DIFFERENT LININGS COMPARED
The chute on the left carries all the rice coal produced in the breaker. This lining has been in use for two years without repairs, the one broken section having been fractured by the accidental dropping of a wrench. The chute on the right is supplied with blue-annealed steel lining, and it has been found that this chute material needs to be replaced four times a year.

the conclusion that coal will slide on this substance at the same, or approximately the same, angle as it will on blue-annealed sheet iron. The longer the lining is used the more polished it becomes (as is the case with the sheet iron) and the more readily will the coal move upon it.

At the present time the company above mentioned is using the lining only for the small sizes of coal, employing only 8 and 12-in. pipe for its chutes. It has not attempted to use this material for larger sizes of coal, but may do so at some future date.

Susquehanna Collieries Co.'s Improvements Near Shamokin, Pa.

Coal Will Be Discharged Underground by Rotary Pump and Hoisted by Skip—This Has Not Been Tried Before in the Anthracite Region—Pulverized Coal Will Be Burned in the Power Plant

MANY new improvements have been made by the Susquehanna Collieries Co., Shamokin, Pa. New shafts are being sunk, miles of new tunnels are being driven, and a new power house is being constructed as well as a new breaker. The *modus operandi* of carrying on the mining was prohibitive because of excessive hauls both underground and on the surface. Consequently some new scheme had to be devised and it was decided to sink the two new shafts—the Pennsylvania and the Richards.

These shafts are only 2,400 ft. apart, but one is in the Pennsylvania, the other in the Richards Basin. To have brought all the coal to one shaft would have meant the expenditure of money for tunnel driving, and would have concentrated so much coal at one shaft as to have interfered with the hoisting.

The Richards shaft is 15 x 23 ft. outside of the timbers and is to be sunk to a depth of 1,000 ft. It is a

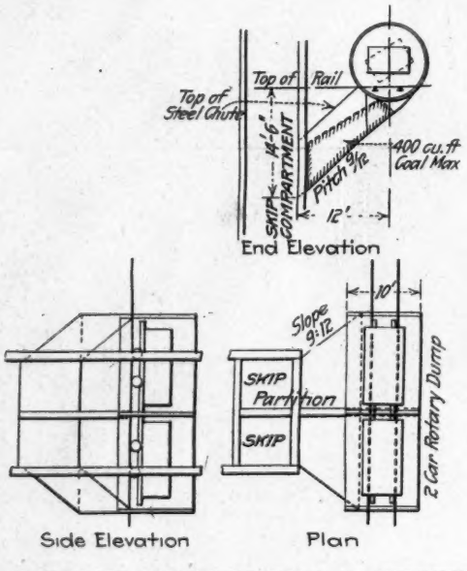
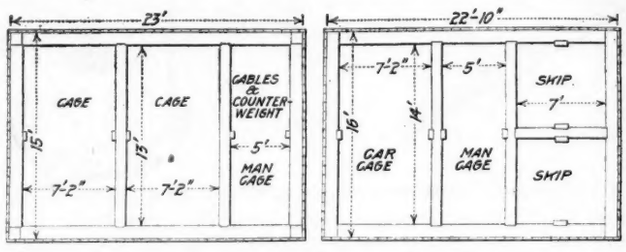


FIG. 1. PROPOSED SHAFT STATION AT PENNSYLVANIA SHAFT

The Susquehanna Collieries Co. contemplates the use of skips in place of cages, and this will make it necessary to dump the coal underground. For this purpose a rotary dump is proposed.

three-compartment shaft, two for cages and one a combination manway, column and cableway. An electrically driven hoist will be used to operate this shaft. Four levels will be worked from it and 3,000 ft. of tunnels will be driven to connect it with present and new workings. The timbering in the shaft is 12 x 12 in. set on 4 ft. centers. A concrete casing down to a depth of 85 ft. is now in place. Ordinary cages will be used at this shaft to bring the coal to the surface, as it must be transported on a narrow-gage track to the Pennsylvania Colliery breaker. This is at a distance of 2,400 ft. from the shaft. On Jan. 16, 1920, the shaft had been sunk to a depth of 110 ft. A plan of the shaft appears in Fig. 2.

The Pennsylvania shaft is different in design from the Richards shaft. It consists of 4 compartments, the outside dimensions being 16 x 22 ft. 10 in. Instead of using cages in this shaft the intention is to use skips,



FIGS. 2 AND 3. CROSS-SECTIONS OF THE RICHARDS AND PENNSYLVANIA SHAFTS

The first cross-section is of the new Richards shaft, where two regular cages are to be used, while the second cross-section is of the Pennsylvania shaft, in which skips are to be installed. The use of skips makes it necessary to provide a compartment for handling of such crippled mine cars as have to be sent to the surface for repairs.

which have not been previously employed in vertical hoisting in the anthracite region. These skips will have a capacity of two mine cars each. The two skip compartments extend across the end of the shaft and at right angles to the man- and timber-way. A central compartment between the skip- and man-way is to be used for a pipe- and column-way. Thirteen thousand feet of tunnels will be driven from this shaft to reach all parts of the present workings and connect them with the new shaft. These tunnels are on four different levels. A plan of this shaft is shown in Fig. 3.

The Pennsylvania shaft as completed will be sunk to a depth of 1,030 ft. and concreted to a depth of 50 ft. If No. 2 bed is found to be of a suitable depth it will be reached by slopes, but the shaft will not go below the No. 3 bed. The skip will dump directly into the rock-separating house. A steam hoisting engine will be used at this shaft for raising the skips.

The tunnels in this shaft had on Jan. 16 been driven to a total distance of 1,490 ft., the No. 2 level 730 ft. and the No. 3 level 760 ft. No. 2 tunnel was driven 730 ft. between July 21, 1919, and Jan. 16, 1920. This tunnel is 12 ft. wide, 7 ft. high above the rail and carries a ditch 1½ ft. deep below the top of the rail. The tunnel was driven through sandstone and slate. Ingersoll-Rand, water-line, Dreadnaught drills No. 248 are being used in this work. Three of these drills are employed to each tunnel. Thirty holes 8 ft. in depth are drilled to a round and between 100 and 150 lb. of 60 per cent dynamite is used to one shot. The drilling crew consists of six men and the mucking crew of five or six men.

Progress on No. 2 tunnel was retarded to some extent while some coal beds were passed, as trouble in sup-

porting the roof was encountered and concrete roof arches had to be put in place. No. 3 tunnel was driven 760 ft. between the same dates as those given for the No. 2 tunnel. No. 3 tunnel has been driven entirely through conglomerate and is the same size as No. 2 tunnel. Nos. 1 and 4 tunnels are to be driven from the shaft when it reaches the proper point. At the present time sinking operations on the Richards shaft have stopped because of the erection of the permanent headframe. The Pennsylvania shaft has reached a depth of 210 ft.

Serious Pumping Problem Dealt With

The pumping problem is going to be rather a serious one, as the company estimates that the Pennsylvania shaft will make 3,000,000 gal. of water per day and the Richards shaft half of this amount or 1,500,000 gal., making a total of 4,500,000 gal. Two pumping stations will be installed in each shaft, one on the bottom or fourth level and one on the second level. A centrifugal pump will transfer the water from the sump at the bottom of the shaft to the second level, where another pump will pick it up and force it to the surface for use in the breaker. These pumps will be electrically driven.

The general pumping situation at both shafts is rather unusual. At the Pennsylvania shaft the normal pumping requirements are 2,743 gal. per min., while at the Richards shaft there will be handled 1,138 gal. per min. The maximum pumping requirements will be 7,184 gal. per min. at the Pennsylvania and 2,379 gal. at the Richards shaft. The minimum quantities of water at both of these shafts will be handled by direct-acting pumps in two lifts. The excess water will be handled by batteries of centrifugal pumps which will be cut in one at a time according to the requirements. Less water is encountered at the Richards shaft due to the fact that a drainage tunnel takes care of a large part of the water at this mine.

Coal from the Pennsylvania and Richards shafts will be brought first to the rock-separator house, which will be of steel. Coal from the Pennsylvania shaft will be directly dumped at the top of the separator, while that from the Richards shaft will be hauled by a 15-ton electric locomotive to the foot of a car haul, which will take the cars to the top of the separator. After leaving the separator the coal will pass by means of a drag-line scraper to the top of the new breaker. This building will also be of steel construction. This will replace the breaker at the Pennsylvania and Richards shafts.

All of the improvements are immediately over large pillars underground with the exception of the breaker and it may be necessary to "slush" the workings under this building. This breaker will have a capacity of 3,000 tons of clean coal per day.

Probably the most interesting feature of the whole development will be the new power house, which will use powdered anthracite coal as fuel. The Susquehanna Colliery Co., after a period of experimentation, decided definitely to employ this type of fuel for this plant. The power house will have a boiler capacity of 12,000 hp. and an electrical capacity of 9,000 kw. Steam turbines and the latest improvements in all equipment will be used. The transmission line will be double and will have a total length of 40,000 ft. The purpose in having two separate transmission lines is to provide a reserve line in case of accident to the main line. Wooden poles will be mainly employed but steel towers will be used at all important crossings. Alternating current will be transmitted at 23,000 volts, 3 phase, 60 cycle. All hoists, fans, compressors, haulage motors, etc., will be electrically driven.

One timber yard, as well as one shop and one warehouse, will serve both of these collieries.

When the mines are operating to their normal capacity the Pennsylvania shaft will have a minimum of 8 and a maximum of 12 electric locomotives underground while the Richards shaft will have a minimum of 6 and a maximum of 10. Forty-five pound rail with a track gage of 44 in. will be used on all haulage roads.

Next to the use of powdered fuel, the most interesting feature of this improvement is the use of the rotary dump underground. This is shown in Fig. 1. The coal is discharged from the car into a coal pocket directly underneath the dump, and from here it is run into the skip for hoisting to the surface. Two cars are discharged simultaneously and the pocket has a capacity of eight cars, or four on each side. The cars are placed on the dump by means of a barney and after discharge they proceed by gravity.

Steamship-Fuel Supplies at Vladivostok

CONSUL David B. Macgowan, Vladivostok, Siberia, Dec. 6, 1919, states that the principal fuel dealers in Vladivostok are two Russian firms and a Japanese firm, which supply launches and small boats only, the Russian firms using for the most part coal shipped to Vladivostok from the Island of Sakhalin, and the Japanese firms using coal shipped from Japan. The Standard Oil Co. has a branch there, which supplies oil and some gasoline for motor boats and motor cars, but oil-burning vessels that have visited Vladivostok always have had sufficient fuel for the round trip or have called at Hongkong for fuel.

The firms referred to can hardly be considered as regular dealers, inasmuch as their supplies are limited, and in the case of the Russian firms fuel is only a side line of their regular business.

The quantity of coal, fuel oil, Diesel oil, and gasoline ordinarily carried in stock is exceedingly small and not to be depended upon for shipping purposes. The average minimum stock of coal probably would not be more than 2,000 tons.

On account of the fluctuations in the ruble-exchange rate and the present unsettled conditions, prices are continually changing. The average price of coal is about $20 per ton, while a few years ago, before the war, steamer coal could be obtained for $5 or $6 per ton f.o.b. As a result of the European war prices of fuel have been multiplied about four times.

The only varieties of coal worth mentioning are "Sakhalin coal" and the Japanese "Ochi lump." These supplies are not used by foreign naval vessels stationed at Vladivostok. Such vessels are supplied with coal by their respective colliers. Neither the Sakhalin nor the Japanese coal is of the highest quality, Sakhalin coal averaging a little better than Japanese. The coal from Sakhalin contains about 8,400 calories per ton and Japanese coal about 7,250 calories; and as coal containing less than 7,200 calories is not considered suitable for steamers it will be seen that the quality of Sakhalin and Japanese coal is little above the minimum for shipping purposes.

U. S. Steel Corporation Acquires Large Coal Acreage

Purchases 8,933 Acres of Steam Coal in Pittsburgh District and 15,662 Acres of Surface in Kentucky—Decrease in Tonnage Mined Last Year as Compared with 1918—Low Accident Record Maintained

DURING the year 1919 the U. S. Steel Corporation made large purchases of coal lands and obtained extensive mining rights to supply its tremendous needs for fuel in its multifarious activities. During the year the Corporation purchased 8,933 acres of steam coal located in the Greene County field, which is in the extreme south of the Pittsburgh district, while in the Connellsville region it purchased some small parcels of coking land aggregating 96 acres of fee and 133 acres of mining rights. In Letcher and Harlan Counties, Kentucky, it acquired 15,662 acres surface and in the Illinois coal fields 153 acres coal land.

The total expenditure of the coal and coke company subsidiaries of the corporation was $12,958,647.86. The inventory of Dec. 31 showed the value of coal, coke and other fuel on hand to be $7,517,024 as compared with $12,526,191 on the corresponding date in 1918.

The report for the year ended Dec. 31, 1919, shows that the corporation mined 28,893,123 tons of coal as compared with 31,748,135 tons the year previous. Of that tonnage 22,955,636 tons were used in the manufacture of coke and 5,937,487 tons for steam and gas and other purposes. During the same period there were 5,933,056 tons of coke manufactured in beehive ovens and 9,530,593 tons in byproducts oven, a total of 15,463,649 tons as compared with 17,757,636 tons the year previous.

Large Outlay for Housing and Equipment

In the Connellsville district there were expended during the year $385,841.22 for additional housing facilities. At Footedale works an electric-driven hoist and haulage system were completed, at Phillips works an electric system is being installed and at Colonial No. 3 works additions to the electric power plant were completed.

An additional high tension power line from Colonial power plant 3 to works 4 was completed. Pumping equipment to remove mine water is being installed at Leisenring 2 works and additional mine pumps at Dearth and Collier works were completed. At Ronco works additions are being made to the tipple and 100 steel mine cars were acquired. At the Bridgeport works on account of the extension of the electric haulage system a 500-kw. generator and a 20-ton locomotive were purchased.

In the Pocahontas Field, W. Va., on account of additional housing facilities at Nos. 2 to 12 works, there were expended $455,680.52. For a new steel tipple and mine equipment, 108 tenements and an emergency hospital works 8, $230,266.19 were expended. For a coal mining plant and town site at Lynch, expenditures aggregating $2,926,035.40 were made. This development is now practically completed and the new mine is being operated. For 424 steel side dump cars for transport of coal and for 294 mine cars expenditures were made amounting to $534,903.32. For the coal mines at Sygan, Pa., 6 short-wall coal mining machines were purchased.

The corporation's force of employees showed a decrease of 16,000 in 1919 compared with 1918, the report showing 252,106 last year, whereas in 1918 there were 268,710. Of this number 24,595 were employed on the coal and coke properties, while 28,378 were engaged on the same properties in the previous year. On the other hand, the total salaries and wages paid shows an increase of about $27,000,000, the total paid in 1919 aggregating $479,548,040 as compared with $452,663,524 in 1918.

Nearly 15 Per Cent Increase in Average Wage

The average salary or wage per employee per day of all employees exclusive of general administrative and selling forces was $6.12 as compared with $5.33 in 1918, while the average salary or wage per employee per day of all employees was $6.17 as compared with $5.38 the previous year.

The corporation in its Northern coal and coke property has 251,433 acres of coking coal; 123,443 acres of steam and gas coal, and 94,718 acres of surface; 68 coke plants; 21,107 beehive ovens; 2,558 byproduct ovens and has 29 coal plants not connected with coke plants. Of this number there are in the Connellsville region 60,543 acres of coking coal, 23,140 acres of steam and gas coal and 23,988 acres of surface, 53 coke plants, 18,970 beehive ovens and 8 coal plants not connected with coke plants.

Works Has a Benzol Recovery Plant

Its Southern coal and coke property, known as the Tennessee Coal, Iron and R.R. Co., consists of 191,773 acres of mineral interests and surface, 143,146 acres of mineral interests only, and 14,746 acres of surface only. There are located on developed sections of the above property 9 coal-mining plants, comprising 15 operating mines, producing coal for manufacture into coke and to meet the steam- and gas-coal requirements of the manufacturing plants of the company. In connection with these operations there are 8 coal washing plants and 7 coking plants, the latter comprising a total of 2,974 beehive coke ovens. At Fairfield, Ala., there is located a byproduct coke works consisting of 434 ovens. A benzol recovery plant is connected with this works.

The water supply plants of the subsidiary companies in the Connellsville coke region consist of 13 reservoirs, six pumping stations and pipe lines aggregating 92 miles in length and with a daily capacity of 18,000,000 gallons, furnishing water for use in manufacturing coke and in addition supplying water to three cities.

The total expended by the Corporation and the subsidiary companies during the year for safety work was $1,131,446, compared with $1,110,064 in the preceding year. No material reduction in the number of serious and fatal accidents per 100 employees was made in 1919, but the low record of 1918 was maintained. This showed a decrease in serious and fatal accidents of 46.47 per cent as compared with the record of 1906. The entire time of 112 employees is devoted to safety work, while 5,694 employees are now serving on safety committees.

The total amount disbursed by all companies during 1919 in connection with work accidents was $4,267,355. Of this amount 83.28 per cent was paid directly to injured employees or their families or in taking care of them. To provide prompt and adequate treatment for employees in case of accidents the subsidiary companies have built and are maintaining 286 emergency stations, 25 base hospitals with a staff of 162 surgeons and physicians whose entire time is given to company work, and 104 outside surgeons retained on a salary—all without charge to employees. There are also being conducted 63 stations for training employees in first aid and rescue work.

In furtherance of the established policy of providing modern sanitary facilities for the health and comfort of the employees, much additional equipment was installed throughout the plants and mines during the year. To date 1,496 comfort stations have been installed with 16,999 washing faucets or basins, 2,619 showers and 113,291 lockers. The cost of sanitary work during the year 1919 was $3,208,661.73.

Operators Combat Hysteria in Effort to Stabilize Prices

REPRESENTATIVES of the coal-operating industry in Washington are calling the attention of members of Congress and Government officials to the difficulties which beset the operators in their efforts to hold down the price of coal. To begin with the Sherman Act precludes them meeting and agreeing to reduce prices to levels which would be regarded as fair. In addition, companies accustomed to placing contracts during January, February and March postponed action until the expiration of Government control, so that with the President's request to all Government agencies to make early purchases there is now a clamor for coal.

Despite earnest requests for postponement the Navy insisted upon calling for bids for 1,500,000 tons. As was expected, much less than the quantity required was offered. To be specific, only 400,000 tons was tendered. The announcement far and wide that the Navy cannot get coal even at prices ranging from $1.30 to $1.92 above the Government maximum price in force up to April 1 adds to the hysteria which the operators, compelled to act as individuals, are trying to counteract.

To make the matter worse, law makers and other officials are informed that the railroads are unusually handicapped in their efforts to supply coal cars. The diversion of some 3,000 cars daily so that the interior may be supplied with coal during the strike, coupled with the return of the roads to private operation, has made it extremely difficult to secure the return of these cars to normal channels. Inability to secure cars, it is declared, has added more to the price of coal since the commission's award than did the 27 per cent wage increase.

It is admitted that prices since April 1 have risen more than the increase in the cost of labor and of expenses due to inability to secure cars, but it is pointed out that quite contrary to custom the coal-mining districts are being overrun by buyers who are bidding against each other and making it extremely difficult to prevent the rise of prices to artificial levels. It is said that automobile and luxury manufacturers are particularly to blame for frenzied efforts to buy coal at any price. Little reason is believed to exist for these hysterical efforts to make coal contracts.

It is reasonable to believe that if a car supply equal to that available just prior to the strike, when a weekly production of 12,000,000 tons was attained, were to be made available production would be abreast with demand within ninety days. As there is no immediate hope of adequate car supply, however, it is argued that this is not the time to make contracts.

The Attorney General is being criticized for aggravating the situation to some extent by his statement in regard to the export situation. In his statement to district attorneys he said that our port facilities are adequate to the export of only 30,000,000 tons per annum. This has given the impression that with the lifting of the ban on exports coal at the rate of 30,000,000 tons will begin to leave the country.

As a matter of fact ocean tonnage is not available for more than one-third of that amount, even if a market were available.

Another obstacle to stabilized prices is the practical certainty that freight rates will be substantially increased before next winter. This fact is spurring large consumers to greater efforts to obtain as much coal as possible before the increase goes into effect.

Stafford Gets Five-Year Sentence and May Be Deported

After refusing to grant a new trial, Judge T. J. McGinnis at Beckley, W. Va., on April 5, sentenced Tony Stafford to serve a term of five years in State Penitentiary at Moundsville, W. Va. Stafford was convicted at the January term of the Criminal Court of Raleigh County as one of the ringleaders of a gang of armed men who shot up the mines of the E. E. White Coal Co. at Glen White in November, 1917.

The State charged that Stafford was a national organizer of the United Mine Workers and caused him to be arrested in February, 1919, more than a year after the crime with which he was charged had been committed, and had eleven others taken into custody at the same time. The twelve men were indicted and Stafford was tried at the October, 1919, court, the jury being unable to reach a verdict. At the January term of court he was convicted of attempted murder in the first degree, the maximum penalty for which is five years in the penitentiary. Stafford therefore received the maximum sentence. Deportation proceedings also are pending against him.

As related heretofore, four of the men under indictment with Stafford confessed at the March term of court and each was sentenced to serve a year and a day in the State Penitentiary. The trial of Ed Snider, who was one of the leaders of the attack on the Glen White mine, began on April 6.

Cushing* Says Frelinghuysen Commissioner Will Raise Price of Coal

Department of Agriculture Spends a Million a Year Ascertaining Prices—As a Result Farmers Sell at Highest Prices—Commissioner Has Powers but No Money—Financial Support Will Come Eventually

A GROUP of men in Washington believes that the Government should control the distribution of all necessaries of life. This proposal was given voice a year ago when it was suggested that we should re-form our Government to have two cabinets. One cabinet was to take care of the political matters. The other cabinet was to control the industries of the United States. This second, or industrial, cabinet would be nothing but the old War Industries Board elevated to a position of permanency by legislation, with each member in the new body being detailed to the control of some one raw material.

Some men want two Cabinets—a political and an industrial body. They want a commission for every raw product. When the price is known, no excess product reaches the market and prices rise. Why use Government funds to support such a development? Commissioner would need two millions of dollars a year to carry on work.

In Washington recently the advocates of the industrial cabinet recognized that their proposal was premature. So they are now ready to accept a compromise provided they get something which will head in the direction they want and will land them ultimately at their goal. The resultant compromise is the bill introduced by Senator Frelinghuysen in the Senate in March advocating the appointment of a Coal Commissioner.

His proposal at first seems so innocent and so good that it is easy to say that there is everything in its favor and nothing against it. It rests upon the old saying from Holy Writ: "Ye shall know the truth, and the truth shall make you free." That is, if we know what a miner earns and what he spends or must spend to live decently, we can figure what his wage ought to be. If we know what an operator's costs are and what his selling prices are, we can figure his profits and know whether it is a reasonable profit. If we know what the consumption is and what the production is and how it is distributed we can know whether there is any partiality shown to any consumer. The plan looks good.

Fortunately, it is not necessary to imagine only what this sort of program will mean to prices. We have a concrete example in the current prices of food. The Department of Agriculture conceived something like four and a half or five years ago that it would be an admirable thing for it to undertake to stabilize the prices of food. It built up an organization which now spends annually a million dollars in collecting and disseminating market information alone. It works as follows:

Shipments of vegetables begin in Florida about Jan. 15. The center of production moves north at the rate of about fifteen miles a day. As soon as this crop movement starts the Department of Agriculture sends an agent into that field. He has an office always in the center of production. He gathers facts as to the volume of production, the volume of shipment, and where these vegetables are going. At the same time the Department of Agriculture has in each of the large cities a market-reporting agency. It collects data as to the demand and the prices. The market reporters in New York, Philadelphia, Boston, Pittsburgh, Cincinnati, Cleveland, Detroit and Chicago telegraph every day their figures to the department in Washington. It in turn transmits all its data to the man who is at the center of production. The man at the center of production transmits to the market reporters in the large cities his data on shipments through exactly the same channel. If I am not mistaken, the Department of Agriculture uses on this service in disseminating this information 15,000 miles of leased wire.

Under that system of governmentally regulated distribution of food, I ask any business man to tell me how it is possible to avoid the stabilization of prices upon a higher than normal level. The high cost of food today—when you know this method—is not hard to understand. In other words, the people of the United States are paying through their Government a million dollars a year in order to have the prices of their food held up on themselves.

Large Events Grow From the Small

We come back now to Senator Frelinghuysen's proposal that we shall establish a Coal Commissioner presumably to do precisely the same thing in coal. The experience of every man in Washington is that everything starts out small and grows. Perfect examples of that are the Department of Agriculture and the Post Office Department. The most conspicuous example of it is the Interstate Commerce Commission. That is, everything starts out apparently without any money but overloaded with power. Rather than abandon the thing because it is unworkable, the tendency is in time to give it enough money to allow it to be workable.

The proposal for a Coal Commissioner is to give him enormous power over the coal trade. However, the first appropriation is only $50,000. Yet, if he were to do what he is supposed to do, it would cost at least

*George H. Cushing, managing director, American Wholesale Coal Association, in the course of an address entitled "Ruining in an Effort to Cure," delivered before the Albany Chamber of Commerce, April 7, 1920.

$2,000,000 a year. Naturally, the Coal Commissioner, when once established, will be harmless and a joke. But his office will not be abolished because it is a joke. On the contrary, he will plead for an appropriation which will allow him to do what he is empowered to do.

When he gets the money we will have the same old process in coal that we are now having in food. That is, we will get governmental information as to where is the best market and it will be distributed to the producers. We will receive information from the market reporters as to where coal is bringing the best price. Governmentally regulated distribution, therefore, will stabilize the coal price, and stabilization always means a higher price level.

I am perfectly willing to admit that from the coal man's standpoint this prospect of sure profit is highly attractive. It gives a man a profit as the result of governmental interference which he has not the wit or the business ability to get for himself in a highly competitive market.

However, from the standpoint of the consumer it strikes me as rather amusing for the people to pay taxes to hire their own servants to sit in Washington and maneuver to put up commodity prices.

Anthracite Wage Conference Expects to Reach Agreement Soon

So rapid has been the progress of negotiating a new working agreement with the anthracite mine workers that the sub-committee of operators and miners' representatives has nearly finished its work. The sub-committee held longer sessions last week and statistics covering the cost of living and comparing the earnings of the anthracite and bituminous mine workers were considered.

At the session held on Tuesday, April 6, the operators replied to the figures heretofore read into the records by the miners, purporting to show the average full-time weekly earnings in the anthracite mines. The miners are said to have presented statistics showing $900 to be the average yearly earnings of a day worker in the hard-coal region and $1,300 to $1,600 to be the average wage each year of a contract miner.

Consideration of similar statistics occupied the time of the sub-committee on April 7, while at the conclusion of the session held on April 8 it was announced that the operators had continued the presentation of their case, offering statements of the average earnings of various classes of mine labor obtained from the payrolls of 80 per cent of the operating companies in the anthracite region during both 1916 and 1919. The operators and miners' representatives then discussed the application of these figures to the problem before the committee. The operators contend that the average yearly wage is much higher than the miners state it to be.

At the conclusion of the session held on Friday, March 9, this statement was given out:

"At the session of the Sub-Committee of Anthracite Operators and Mine Workers held today the operators read into the record data concerning anthracite operators' analysis of earnings of employees in relation to rates and opportunities for employment; a statement showing actual average earnings of employees by occupation with the increase as compared to 1914, and statements giving comparisons of these earnings with the earnings of mine workers. Following this the miners introduced statistics upon the cost of maintaining a family at the prices prevailing in March, 1920, being a summary of the most important authoritative studies of family living costs and standards of living."

The submission of statistical data seemed to have been completed at the Friday session, but on the following day, Saturday, March 10, the miners' representatives insisted on reading into the records data covering the relation between wages and production, costs, prices and profits in the anthracite coal mining industry.

There was a heated discussion before the data were allowed to go into the records of the conference, the mine workers contending that since the operators had introduced statements showing bank accounts they were justified in introducing figures showing operating costs and their relation to earnings.

Canadian Retail Coal Dealers Meet in Annual Convention

The Canadian Retail Coal Association held its sixteenth annual convention April 7 and 8 at the King Edward Hotel, Toronto, with a large attendance. Mayor Thomas L. Church, in welcoming the delegates on behalf of the City of Toronto, expressed appreciation of the good work of the National Coal Council of the United States in regulating the supply of coal during periods of shortage.

The principal feature of the convention was an address by Ellery B. Gordon, a prominent member of the National Coal Council, on "Things Worth Knowing." He dwelt on the necessity of mining coal in the most scientific and efficient manner and described the methods followed at large American mines. He also touched on the labor situation, stating that the National Coal Association was co-operating with the Government to find a solution of the labor problem, working in the interests of the coal trade not only in the United States but in Canada as well. There was at present, be said, no congestion in the shipping of coal to Canada.

Douglas Mallock, of Chicago, known as "the poet of the woods," gave an inspiring and witty address, which delighted his hearers. He made a plea for more sentiment is business and a wider appreciation of the finer things of life.

At the second day's session George H. Cushing, managing director of the American Wholesale Coal Association, gave an address on "Shippers," and John E. Lloyd, president of the National Retail Coal Merchants Association of the United States, spoke on "What Has Been Done," giving an instructive account of the activities of the association. Officers were elected as follows: John M. Daley, London, president; J. A. McLean, Wingham, vice-president; B. A. Caspell, Toronto, is permanent secretary-treasurer. A banquet at noon brought the convention to a close.

A survey of the Government's coal storage facilities is being made by the Bureau of Mines. A necessary preliminary to the early purchase of coal, as requested by the President, is the ascertainment of the maximum storage facilities available. An estimate is to be made of the facilities which it would be practical to create.

Why Do American Mine Workers Produce More Coal Than British?*

Questions Whether Machinery or Thick Coal Is the Cause—Regards Room-and-Pillar Mining as an Undoubted Explanation of Cheap Coal—Low Cost Is Not the Outcome of Cheap Labor

By George S. Rice†
Washington, D. C.

FROM time to time statements have been published comparing the coal-mining practice in the United States with that in Great Britain. A recent article in a British journal points out that the American miner produces two and a half times as much coal per shift as the British miner, at one-half the cost per ton, and then proceeds to explain the natural, industrial and engineering causes which have led to this result. Among the causes advanced is that the American coal miner has the advantage of working seams of coal the operation of which presents less difficulty owing to the fact that the coal-mining industry in the United States is of more recent date than that of Great Britain.

Great Britain has considerable disadvantages in the greater overburden of its deep coal, in the difficulties resulting from shattered roof, in the irregularities in the floor of the mine and in the cost of operating longwall. By the time the well-conditioned Appalachian, Central and Interior fields of the United States are exhausted British coal-mining history will have been ended.

The latter surmise is not correct, because where these advantages exist they will persist regardless of the time during which mining continues. The coal beds of the United States are not buried deeply, except in the remote parts of the country, as in the Uinta Basin of Utah. The article to which reference is made states that many of our miners are still employed on outcropping seams reached by "adits" (which we term drifts) or by vertical shafts of moderate depth. It is probable in fact that the great bulk of the coal of the United States is taken from a depth of less than 400 ft.

The article adds, "In either case [whether the coal comes from drift mines or from working with shallow shafts] the cost of hauling and hoisting is reduced greatly, and more coal can be extracted in a given time, with less consumption of mechanical power, than when the coal is raised from a great depth." As to hauling, this is not correct, as coal in the United States usually is mined at any given operation from only one bed, hence that bed is worked out rapidly and the average haul is far greater than in British collieries.

On the other hand, most of the coal is hauled over roads that are comparatively level and the same motive power—electricity—often hauls the coal from the rooms direct to the tipple, and the cars are not handled by a number of intermediate systems, as in the mines of Great Bitain. The relatively cheap method of hauling by trolley locomotive is one of the largest single factors tending to the production of cheap coal and in lessening the number of men employed in hauling.

In Great Britain trolley hauling is forbidden on account of the danger from electric sparks. It appears to me that, while there is danger, yet if such hauling were done only on those roads by which the air enters the mine, electric haulage could be safely introduced in many mines in Great Britain, especially if the roads were lined.

The lesser consumption of mechanical power due to the shallowness of the mines is a small item. Depth, of course, has a tendency to limit output, but that difficulty in turn can be taken care of by increasing hoisting facilities. In many mines in Great Britain a number of auxiliary underground incline hoists have to be used, and this no doubt adds in an appreciable degree to the production cost and lowers the productivity of each man.

It is stated that another natural advantage enjoyed in America is the greater proportion of thick seams of coal, which make it easy to employ mechanical coal cutters and conveyors. While no doubt there are thinner beds worked in Great Britain than in the United States, and perhaps the average is thinner, yet greater thickness of coal does not play so important a part in reducing the use of labor as does the method of mining by the room-and-pillar system, which is that usually followed in America.

In the mines of the United States the burden on the coal is so much less than in Great Britain and the geologic disturbances have in such lesser degree weakened the measures that the roof will stand well in wide places with comparatively light propping. Room-and-pillar work is far better adapted to the use of undercutting machines than longwall, particularly where the coal is at all irregular in dip and in faulty condition, as is apt to be the case in Great Britain.

The disadvantage from a national standpoint of the room-and-pillar system is that unless the pillar withdrawal is systematically done there is great loss of coal, and the top or roof seam, where any such coal is present, is apt to be lost. In Great Britain longwall is the prevailing system, and practically all the coal is recovered, whereas in the United States, owing to the fact that some pillars are lost and others, as in Illinois, intentionally left unmined in the interest of safety, the loss of pillar coal together with the loss of roof coal reaches from 30 to 40 per cent.

The writer of the article declares that conveyors

*Article entitled "Comparison of British and American Coal Mining" appearing in Monthly Reports of Investigations of U. S. Bureau of Mines.

†Chief mining engineer, U. S. Bureau of Mines.

greatly assist in the operation of thick beds. This is not so. Conveyors are of no advantage in the working of thick seams of level coal, for in such cases the cars can readily be taken direct to the face. Only where coal is thin are conveyors advantageous. In longwall work they are particularly useful.

The article quoted states as a second cause of the American ability to produce cheap coal the fact that coal mining in this country "is regarded as a low-class industry calling for no special ability, and a large number of miners employed underground are agricultural immigrants." While the latter statement is in a measure true, the argument is unconvincing in that these immigrants receive double or triple the wages of the British miners, and therefore, in my opinion, cheapness of labor is in no sense conclusive explanation of why coal is produced more cheaply in the United States than in Great Britain.

Pick Mines Compete with Machine Plants

The third cause assigned for the cheaper mining of coal in this country is the more extended use of mechanical appliances below ground. While the use of mechanical appliances, other than mechanical haulage, does explain some part of the lower cost, it is by no means the whole cause, since one can find almost side by side with machine mines, and entering into competition with them, the so-called "pick" mining plants. Pick mines are not rightly so termed, for in them explosives and not picks are made to do the work of mining.

"Shooting off the solid," a dangerous practice, has replaced undercutting by picks, though real pick mining still survives in a few places. The difference in cost is important competitively, but is not sufficient to explain the far lower cost in the United States than in Great Britain, because it is only a difference ranging from 5c. to 15c. per ton, as shown by the scale agreements made between operators and mine workers. Mechanical undercutting machines, however, permit concentration of work and increased production. There would not be, in fact, enough miners to serve the mines if the machines were removed. A little over one-half of the coal produced in this country is undercut by machines—50 per cent of the bituminous coal in 1917 and a little thin-vein anthracite.

The article quoted says: "The introduction of machinery has been hastened and has removed the handicap imposed by the employment of unskilled labor underground." This is undoubtedly true, but of course does not account for the much lower costs in the pick mines in the United States as compared with mine costs in Great Britain.

"The thicker seams and wider working stalls and roads, or galleries, of American mines also have favored the introduction of machinery underground." This is true, as pointed out above.

Thinks American Advantages Will Cease

"The natural advantages at present enjoyed by the American coal-mining industry, however, will in time be lost, for the outcrop seams of coal and the more easily worked thick seams will in a few years be worked out, and the conditions under which the mines are operated will approach more closely those existing in our own country [Great Britain]." I think that the hope expressed in this statement will be dashed, as in the great mining districts of the country the coal, as previously stated, is shallow, and while increased costs come from attempts to lessen the waste in the mining of coal and also will result from the use of improved safety appliances, yet the natural advantages will continue at least until the time when the Appalachian, Central and Interior fields are worked out. By that time the British fields of coal will be exhausted.

Illegal Strike Cost Illinois Mine Workers $27,299

Farrington Urges Punishment of the Guilty, Declaring That Discipline Must Be Maintained if the Union Is to Last

It cost $27,299 to settle the "wildcat" strike of miners in the Belleville, Springfield and Peoria districts last summer, according to the report made at Peoria by State Treasurer Walter Nesbit to the state convention of the United Mine Workers of America in Illinois. Nesbit bitterly scored the "insurgent element of the miners," who, he said, "camouflaged themselves under the banner of democracy and free speech," while spreading reports that the funds of the state organization were being illegally spent.

"They advocated disobedience to our constitution and violation of the written terms of contract," he said. "We spent $27,299.58 to defray the expense of subduing this unwarranted and illegal strike. I believe we would have been justified in spending every dollar we have rather than to allow the organization to fall into the hands of those who were leading the rebellion."

President Frank Farrington referred to the strike as "a movement that was in positive defiance of every law and principle of our union." In his report Farrington devoted much attention to the recent strike and to the injunction suit against the officers. "Some day," he said, "we will have to resist this procedure. Our right to strike must never be forfeited, else, like serfs, we will be bound to our task. We shall have to demonstrate by resistance that we are going to sustain our freemen's right to strike, to redress wrongs if need be, no matter what the cost."

Farrington, in discussing the rebellion of some of the miners last summer, urged punishment for the guilty, declaring that discipline must be maintained in the ranks if the union is to stand. He denounced the insurgents as trying to deliver the organization over to the socialists.

The insurgents demanded that those of their number who had been discriminated against since the unauthorized strike be reinstated, with a strike as the alternative. They were voted down by 480 to 123, and by the same vote the convention adopted a resolution for a peaceful settlement of the controversy over the men who are said to have suffered from the discrimination.

Samuel French, a Socialist Labor Party leader, was refused permission to address the convention. French gathered his followers about him and held an "outlaw" meeting, at which he denounced the state officials of the United Mine Workers as "biological throw-backs, herdsmen and collie dogs." Frank Hefferly of Maryville contributed to the interest of the occasion by denouncing Farrington for defeating him at the recent election.

Operators, Shippers and Railroads Form New Tidewater Coal Exchange

New Body Will Make Prompt Reclassification—Will Protect Quality of Coal Shipped and Suspend Shipments When Quality or Preparation Falls Below Proper Standard

WHEN the Tidewater Coal Exchange passes out of existence as a Government bureau at midnight of April 30 it will be succeeded by the Tidewater Coal Exchange, Inc. About two hundred operators and shippers of bituminous coal and representatives of the tidewater railroads reached this decision at a meeting held at the Bellevue-Stratford Hotel, Philadelphia, on April 7. They also adopted a report prepared on April 6 by the committee appointed for that purpose. Charles A. Owen, of the Imperial Coal Co., of New York City, was the chairman of the committee and Charles S. Allen, secretary of the Wholesale Coal Trade Association Inc., also of New York City, was the secretary.

The new organization, which will succeed to the work now performed by the Government bureau, will be a non-stock corporation incorporated under the laws of the State of Delaware. It will have a directorate of twenty-three to be chosen from the membership of the exchange or otherwise, as may be deemed advisable. Membership in the corporation will be open to all shippers, transshippers and consignors on the same terms and conditions.

Commissioner to Have Complete Charge

The meeting opened with G. N. Snider, of the New York Central Lines, presiding. After a few introductory remarks by Mr. Snider, Henry M. Payne assumed the chair and presided during the remainder of the session.

The rules of the new organization provide that any member violating them may, after due hearing, be deprived of membership in the exchange by the Executive Committee. The secretary-treasurer of the exchange is to be designated by the Executive Committee as the commissioner in charge of all its affairs and there will be a deputy commissioner at Philadelphia and one at Baltimore.

The carriers have been invited to appoint members of an advisory committee, to be composed of one person from each of the following railroads: New York Central; Pennsylvania; Philadelphia & Reading; Central R. R. of New Jersey; Buffalo, Rochester & Pittsburgh; Baltimore & Ohio; Western Maryland, Erie and such other roads as the Executive Committee shall elect, said advisory committee to meet from time to time with the Executive Committee of the exchange, but may not vote in the meetings.

The members decided to continue for the time being the classification now employed by the Tidewater Coal Exchange for bituminous coal as well as the designated pools, and directed that the work of reclassification be prosecuted with due diligence and completed as soon as possible.

The commissioner and deputy commissioners, according to the rules of the new exchange, shall at all times protect the quality of coal shipped to the exchange, through a system of inspection and analysis, if necessary in their opinion, and they may at any time suspend shipments into any pool when, in their judgment, the quality or preparation of such coal is below the proper standard.

Cars containing coal which has been rejected from any particular pool by the inspectors of the exchange, shall be designated as "unclassified" and, upon notice mailed to the registered address of the member, shall be eliminated from the records of the exchange. Responsibility for disposition of such coal shall revert, with all charges from the day following the date notice is so mailed, to the member for whose account the cars were shipped.

The rules of the exchange provide that each member make an initial deposit, not as dues but for working capital, based upon ½ c. per net ton on all tonnage shipped or dumped by him at tidewater ports in the year 1919. This deposit shall not be less than $100 and it shall be subject to revision, based upon shipments Jan. 1 and July 1 of each year, or at more frequent intervals and at any time, in the discretion of the Executive Committee.

The rules of the exchange become effective on coal shipped from the mines on and after May 1.

The headquarters of the new organization will be located in New York City. Rembrandt Peale, the well-known operator, is to be the president; C. A. Owen, vice-president, and J. W. Howe was chosen as temporary secretary and treasurer. Mr. Howe is the present Commissioner of the Tidewater Coal Exchange. Gibbs L. Baker, of Washington, was named as general counsel.

Board Includes Operators' Representatives

The Board of Directors is composed of C. A. Owen, W. G. Townes, E. Kelly Downey, W. S. Alden, Wilbur A. Marshall, and Le Baron S. Willard, all of New York City; G. R. Gabell, W. L. Scott, C. H. Jacobs, Medford J. Brown and Noah H. Swayne, 2d, all of Philadelphia; John C. Lewis, Howard Adams, C. F. Kerchner and C. W. Hendley, all of Baltimore; George W. Anderson and E. Russell Norton, representing New England, and the following representatives of the operators: Rembrandt Peale, W. F. Coale, George H. Francis, Senator T. L. Eyre, Henry M. Payne, J. H. Hillman, Mr. Bolton and Telford Lewis.

The Executive Committee members are C. A. Owen, W. G. Townes, E. Kelly Downey, Wilbur A. Marshall, G. R. Gabell, C. H. Jacobs, Howard Adams, C. W. Hendley, Henry M. Payne, G. H. Francis and W. L. Scott.

There will also be working committees at each port. The New York Committee will consist of Messrs. Owen, Downey, Marshall and Townes. The Philadelphia committee will be Messrs. Gabell, Scott and Jacobs and on the Baltimore committee will be Messrs. Hendley, Adams and Lewis.

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Clear the Air

THE indictment by the Government at Memphis of the American Hardwood Manufacturers' Association has brought to the fore the question of the legality of open market reports. Coal operators should realize that the question in the Memphis case is befogged by the introduction of trade letters and statements of opinions of secretaries and others on future prices and market conditions, so that the issue as to whether it is legal or illegal to report a closed transaction is still in doubt. The coal industry has never been able to get the Department of Justice to rule on this point.

Local coal operators' associations from the first have adopted an open, frank policy toward the Government and have volunteered copies of all circular matter issued to members; a standing invitation to the Department of Justice to object to or criticize any practices. Rush Butler, general counsel of the National Coal Association, has carefully schooled the secretaries of that organization in the proper way to travel and we know his method has not been to see how close to the line the operators may go and still keep within the pale of the law. Rather he has broadly interpreted the spirit of the law and has regularly and conscientiously advised the officers of locals as to their duties in this respect.

We do not believe the coal operators' associations have anything to fear in the continuation of their reports of closed transactions. The indictment and arrest at Indianapolis of R. W. Couffer, the trade reporter of the National Coal Association at Chicago, gives the national association a splendid opportunity to get a clear-cut decision on this very important question of the legality of market reports.

Mr. Couffer has never sold any coal; has never attended any wage-scale conferences, and has never, to our knowledge, written or disseminated any opinions or trade letters on market conditions. He is, therefore, on trial only because he compiles figures of quantities and values of coal sold in the past. He has prepared these reports and has given them out to the public as well as to the coal operators who are members of the association.

His Lenten Fare

CROW FOR THE MAN: NOTHING FOR HIS DOG

How the Public "Gets By"

IF ONLY Dean Swift were with us to look us over and laugh us out of those foolish notions that cause us to exalt small matters into large ones and to bring down our large matters into infinitesimal compass, he would find us just as mirth-provoking as he found his English neighbors in the reign of Queen Anne. The average community obsessed with an idea views it no longer in its proper relations but plays it up out of all proportion to its importance.

Watch a lot of copper, zinc, lead and precious-metal men gathered to stabilize the coal industry and hear these men, who complacently work their own mines only a quarter to half time, deplore the instability of the coal industry that works as much as two-thirds of a full year. Get among a crowd of department-store or hotel men and hear them denounce profits in the coal business that average less than 10 per cent per year in prosperous times and are nothing or a loss in other years which are less fortunate. Yet these men, in their own business, regard 10 per cent on a single sale too low a profit and calculate to turn over their capital many times in a year. In the hotels particularly the visitor has to pay a bribe of 10 per cent or more if he would get prompt and proper service.

The light has not been turned on the department stores and it never will be, for they advertise too liberally in the daily newspapers to make it safe to throw the spotlight on their misdoings. The proprietors of dailies have too keen a sense of business prudence to submit these, their commercial supporters, to the gratuitous misstatements of those uninformed paragraphers who earn their daily bread by attacking the coal industry. These full-page advertisers in the daily press pass easily for national benefactors. They fill places of honor in our political system and preach doctrines to others that they deftly evade applying to themselves. The people who read the public newsprints by that very act save the merchant from investigation and abuse.

If one-half as much attention were given to the profiteering in general merchandising as to the profit making, alleged and actual, in the distribution and sale of necessary products, the public would replace in its reprobation the coal man, the railroad man and the packer by the large storekeeper. The wholesale producer and the distributer have no manner of defense. Baiting them furnishes fun for the public, which likes to see the basal industries plunging in fury from side to side, prodded and pierced by the banderillas of unfriendly journalists.

The biggest offender of all, the department-store baron, quite readily escapes criticism because it is his

purse which supports the daily press. All the power of daily newspaperdom is used to inveigle the public into spending itself poor in the purchase of its luxuries. So much is this true that now the people are not satisfied unless they pay a big price.

They pride themselves not on the excellence of their clothes but on the cost of them. No one is satisfied with the comment that a garment looks and fits well unless the compliment is known to be accompanied by a silent thought that the price paid was somewhat higher than others could afford. The public is hypnotized into visiting the higher-priced stores by the subtlest of suggestions. The people are as a goose that glories in its own plucking.

When restrictive legislation is passed it relates only to basal industries. This practice is justified on the ground that the people must have the product in question while other articles are merely luxuries. The real reason is that the basal industries have been made subjects of attack whereas the others have not. Furthermore the country cannot well handle such employments as the millinery or the garment trades but can to a degree manage to control simpler industries having less varied products.

There are problems in all industries and the most general are perhaps those of seasonality. Nothing is more seasonal, and more senselessly seasonal, than the garment industry, and the clothing trade is continually striving to accentuate that condition. It does not try to spread the business over the year. It endeavors rather to set seasons for buying. It likes a feverish market before Christmas and in the fall, so that high prices can be charged.

It is the people profiting by these industries who exclusively term themselves the general public and write the word with six capital letters. A goodly number of shameless profiteers hide their unconscionable identity under that title "The Public," and they find the mask covers them quite satisfactorily. After all, "the public" is, in common parlance, everybody outside of the industry in question, and the people outside utility industries are largely parasitic, and they are not entitled to have their rights considered as paramount to the rights of those in basal industries.

British Versus American Practice

GEORGE S. RICE, in an article appearing in this issue, ventures to question whether the larger production per man in the United States over that secured in Great Britain is the outcome in any large degree of the use of coal-cutting machinery. He points out that so-called "pick mines" are still running in successful competition with machine mines and that the differential in the price of coal—fixed by the unions—is only from 5 to 15c. per ton.

As a matter of fact, as he points out, coal is mined in pick mines by powder and not by pick. Consequently it may be true that one reason why coal production is so large per man in the United States is that nearly all the coal produced in the United States is mined either by machinery or is shot out of the solid, whereas in Great Britain it is mined by pick, with the powder serving merely as a secondary help.

Miners cannot be secured to mine coal at the pick rate unless they are allowed to blow their coal out of the solid, and the machine mine would have long ago displaced the pick miner if that worthy had been required to adequately undercut his coal. Blasting out of the solid made it possible for the "pick miner" to continue at his trade even after the machines increased the area undercut per man and lowered the cost of producing coal. Steadily the pick miner has contrived to induce the manager to let him do less undercutting and use more powder. The just scruples of the mine inspectors have been similarly overcome.

The coal-cutting machine has had certainly a great part in adding to the output of the American miner and has done much also to keep up the standard of the product despite the necessity for increased output and the steady indifference of many of the miners to the quality of the coal they are loading.

Mr. Rice rightly denies that American labor is cheap, but it is certain that the declaration of the British writer would be much more justified if the miner were being compelled, at the regular rate for pick mining, to undercut his coal the full depth calculated to reduce the need for powder to a minimum. Mr. Rice objects to the ascription to undercutting machinery of the large output per man. His stand should be to insist only that we give powder a similar credit. This stand he probably is loath to take because shooting out of the solid has been the cause of a multitude of accidents and is still a reprehensible practice.

Barring Lack of Cars, Conditions Are Favorable

NEVER were conditions more satisfactory in the coal business than today, barring a lack of cars. Stocks are small; buyers are disposed to stock, knowing that there will be a coal shortage the year round; mine workers are not striking and are anxious for work; the weather is reasonably favorable and industry is as active as the car shortage will allow it to be. There is no difficulty other than the car shortage and the unwillingness of the consumer to buy at excessive prices.

Clearly it is possible to sell at a fair price if only transportation can be secured, and it may be pointed out that in many places motor trucks will help to supply the deficiencies of the railroads. Around Terre Haute, which has mines in its western suburb almost within the city limits, coal is being hauled thirty miles by motor trucks. If the West Terre Haute mines were not so close, possibly the range of ship-by-truck service would not be limited to thirty miles.

There are wonderful opportunities for those who will develop motor-truck direct-from-mine-to consumer service via the public roads. During the freight congestion of 1917 435,000 motor trucks hauled 1,200,000,000 tons of materials. Why should not the congestion of 1920 be similarly met? The opportunity to fill the needs of the near-by communities during rail strikes—which are increasingly common—makes shipping by truck an extremely attractive proposition. Return cargoes will help in reducing the cost of the service. What these will be will depend upon the kind of truck used and the conditions at the mine and in the town to which the coal delivery is made.

Out of the present strike of railroad men will come further demoralization of the railroads. Conditions were bad enough before the strike started; they will be much more severe when the full effect reaches the mines.

DISCUSSION *by* READERS

EDITED BY JAMES T. BEARD

Are Shotfirers Harmful?

Letter No. 1—All progressive mining laws require the employment of shotfirers in gaseous mines. The Bureau of Mines recommends the same. Apparently progressive and well posted mining men would consider it an idle question to ask if the employment of shotfirers can be expected to increase the safety in mining. It is therefore strange to read in *Coal Age*, Feb. 12, p. 309, an article saying: "Of all the archaic, moss-grown, semi-modern, so-called safety ideas, that of employing shotfirers is probably one of the most harmful and dangerous." The article then concludes with the advice: "Spend just half as much money in real ventilation and make the mine really safe."

The writer wisely refrains from signing his name. If he is in any position of authority about a coal mine he'd be a fit subject for investigation by the state mine inspector or the coal company who employs him. That such advice gain no converts, it should not be allowed to pass unchallenged.

The Canadian Collieries (Ltd.) keep their board brattices, at all times, within six feet of the working face. Other mines in British Columbia are even more gaseous. Gas issues and collects in falls of the roof which occur during the working hours. Pockets and blowers of gas are frequently struck as the work advances, and these conditions occur in many places in these mines.

Conditions That Make Shotfirers Needful

The Edison electric mine lamp is now being generally adopted where any new installation of lamps is made, at a gaseous mine, or an old system is replaced by a new one. Methane can not be detected with these lamps. Under such circumstances, how can even a careful miner tell that no gas is present before he fires his shot. If no shotfirers are to be employed, what is to prevent a careless miner, who uses a flame safety lamp, from firing a shot where gas has collected in a cavity in the roof, because his brattice is broken down or not up to the working face?

Gases and lack of ventilation are not the only dangers met with in firing shots and handling explosives in a coal mine. The U. S. Coal & Coke Co. requires that all the "bugdust" from the cutting machines be loaded out of the working places, before the shotfirer shoots the coal. Some of the mines in eastern Kentucky require that the places be swept clean with a broom, so that all the dust is removed before a shot is fired.

The Pennsylvania Mining Law, under certain conditions, requires the dust to be wet down before shots are fired, and the shotfirer must see that these rules are obeyed. He superintends the loading of the hole, determines the kind and quantity of powder and tamping material used, and directs the placing of the hole and the general safety of the place, both before and after the shot is fired, looking for fire, gas or other dangers. The shotfirer must see that the coal is properly mined. Many explosions have been traced to blownout shots where no gas was found in the mine. A single mine explosion may cost the operating company more money than the wages of ten shotfirers.

The shotfirer reduces the danger of missfires or hangfire shots, by shooting with a battery and cable. He also lessens the dangers incident to loading and shooting the holes. The H. C. Frick Coke Co., mining the highly explosive coal of the Connellsville region, has greatly reduced the number of mine disasters by the employment of shotfirers, in addition to other safety measures they have adopted.

Miners Habitually Reckless and Careless

Miners work in more or less danger at all times and usually alone. It is human nature for them to, at times, take a chance and fire a shot that is not safe. No one sees it but themselves, as all traces are removed before the boss visits the place. It is somewhat different with a shotfirer. He gains no benefit whatever from an improper shot, as does the miner, and the improper shot is not fired.

Some miners, with limited experience and unfamiliar with a particular coal field, will drill holes straight into the face of the coal, without mining the coal whatever. They then charge the holes without any tamping and tell the shotfirer they are ready to shoot. They had, perhaps, been accustomed to shooting coal that had been undercut by a mining machine. The supervision of a competent shotfirer prevents such dangerous shots from being fired.

The carelessness that familiarity with handling explosives breeds in some men who are ignorant of the real danger is almost beyond belief. It is not uncommon to see men carry their sticks of powder loose in their pockets while riding into the mine in a trip pulled by an electric motor. They will take the detonating caps out of their pockets with the heads of matches sticking into them, all being carried loosely together in the same coat or vest pocket. Miners will crimp the cap onto the fuse with their teeth, cut the fuse ten or fifteen inches long, light and shove it into a six-foot hole. A few dummy cartridges previously filled with coal dust may be hastily rammed on top of the fuse, and the miner runs to a place of safety.

Bad Practices Eliminated by the Employment of Shotfirers

All these practices are done away with when a competent shotfirer is employed. He has the caps in his charge and distributes them. The powder is issued from a powderhouse, in small boxes made from nonconducting material. No fuses at all are used, as the shots are fired electrically. No caps or powder are carried into the homes of the miners, where the children can get

hold of them and become possible cripples for life. Some mining towns have explosives enough stored in the homes to blow the town to kingdom come. The miners have nowhere else to store it, and the company will sell it only in unbroken packages; so that it becomes a menace not only to the miner's family but to the entire town.

The article to which I have referred, speaking of the shotfiring system, states that "with the increase of real safety departments, mine after mine is abolishing it." It would certainly be interesting to learn the names of these mines and the names of the companies operating them. All men should entertain an open mind for new ideas; but with all our past experience, reports of mining commissions, bulletins of the Bureau of Mines, methods of operation of the most up-to-date coal-mining companies advocating the employment of shotfirers, and our state laws compelling their employment, it would appear that the general consensus of opinion was that to employ shotfirers is abundantly justified. Fewer men are exposed to the dangers of a possible explosion when all the men but the shotfirers are out of the mine when the shots are fired. RALPH W. MAYER.

California, Pa.

Location of Regulators in a Mine

Letter No. 1—The question asked by R. W. Lightburn, *Coal Age*, Feb. 19, p. 367, having reference to the advantageous location of regulators placed in air-courses, in coal mines, is a question that mine foremen and firebosses have been studying carefully for many years.

The mine described by Mr. Lightburn, lying at a depth of 550 ft. and passing 200,000 cu.ft. of air per minute, is a mine above the average size. At so great a depth, a mine requiring so large an amount of air traveling would likely prove an unprofitable venture, unless a good sized output is obtained, say an output ranging from 2,500 to 3,000 tons of coal per day of eight hours.

To meet these requirements and hoist this tonnage from such a depth the cages would probably be in the shafts 50 per cent of the working time, which would cause the fan to operate largely against a dead-end resistance, so to speak. The movement of the cages in the shaft will add materially to the water gage that would be required to circulate this air current through an unobstructed airway.

HIGH PRESSURE ON STOPPINGS AND DOORS

Moreover, this mine is said to be very extensive, which means a tremendous pressure on brattices, stoppings, doors, etc., requiring skill and attention to keep them tight. No matter how well these are built, if constant inspection is not maintained, the drying and shrinking of the cement, the action of the air on the coal and roof, due to the seasonal changes in temperature and the humidity, the yielding of the pillars to the overlying weight as extraction proceeds in the immediate vicinity, and the jar and concussion caused by shots, are all agents that operate to destroy the efficiency of the circulation.

In mining practice, therefore, the highest efficiency will be attained with the smallest possible number of stoppings and keeping these stoppings absolutely tight. It follows that the nearer air-courses can be made continuous, without breakthroughs, the more efficient will be the air current. These considerations show that there is quite a material difference as to where regulators should be placed in mine airways, and mine foremen, today, are rapidly seeing that there is a choice in the location of regulators.

Suppose, for example, the regulator is placed at the intake of mouth of a split and there are say 50 brattices or stoppings on the split. The difference of pressure between the two sides of each stopping is then only the pressure caused by the split itself. None of these stoppings bare the total pressure of the current after the split is made.

But, on the other hand, if we assume that the position of the regulator is now advanced along the intake of the split to a point about midway between the mouth and the inby end of the split, the intake side of each stopping outby from the regulator will receive the full pressure, while beyond the regulator the pressure will be reduced to that caused by the remaining portion of the split. It is clear, in this case, that the difference of pressure on the two sides of the outby stoppings would increase the air leaks if any occurred.

Again, suppose the regulator was placed at the last open crosscut in the split, each of the 50 stoppings outby from the regulator would receive the full intake pressure due to the mine resistance, while the return pressure on all these stoppings would be only that due to the resistance of the return airway. This would greatly increase the difference of pressure on the two sides of the stoppings and would be responsible for very large leakage of air.

STUDY CONDITIONS WHEN PLACING A REGULATOR

It should be said here that, in a split with live workings, which are often equipped with wooden stoppings, the vibration of shots, passing trains, roof falls, and numerous other causes make it almost impossible to keep these stoppings absolutely airtight and these causes should be anticipated in choosing the location of the regulator.

It would be impossible to prescribe the correct location for a regulator that would apply with equal results to all mines. It is a problem that needs individual treatment at each mine. The foregoing, however, are actual conditions as I have found them in my coal-mining practice.

If the regulator is placed at the return end of an air split it would have the same effect as placing it at the intake end of the same split, in so far as efficiency was concerned, but it should be placed outby from all the brattices or stoppings.

I have found it very convenient to place regulators close to overcasts, on the main roads, and have small air-tight, plate doors opening into the inside of the overcast. One inspection will then serve both purposes, that is, to ascertain the condition of the top of the overcast and the regulator. Measurements of the quantity of air passing can be made at the same time, without the necessity of traveling a good distance in a high air current, often in zero weather.

The pulsations of the current caused by the movement of the cages is quite a factor in efficient mine ventilation. It makes little difference whether the blowing or exhaust system of ventilation is employed, the results are the same. In a new mine, the chart of the pressure gage will show a very irregular line, which gradually smooths out as the development of the mine increases,

because the elasticity and compressibility of the current modifies this effect in a large mine.

In shafts from 500 to 700 ft. deep, in the process of development, the action of a force or blowing fan is to create a high pressure when the cages block the shaft. On the other hand, an exhaust fan acts to create a vacuous condition, at such times. Each of these conditions, however, is relieved suddenly, as the cages approach the landings when the shaft compartments are separated by air-tight partitions.

At times, I have seen the current so changeable in the mine, due to this cause, that it was quite difficult to split the air with any satisfaction. In a few instances, the current would be almost at a standstill, and again there would be an abnormal rush of air; and I think it can be safely said, in such cases, there is much choice in the location of a regulator. ROBERT Z. VIRGIN.

Pittsburgh, Pa.

Growing Scarcity of Mine Timber

Letter No. 1—The indirect reference to the growing scarcity of mine timber, in a recent inquiry that appeared in *Coal Age,* Feb. 12, p. 327, suggests an important subject for consideration. It is a question of concern to everyone, inasmuch as the falling off in the timber supply, in mining, will eventually increase the cost of production of coal; and that, in turn, will make the cost of living still higher.

In the study of the question so far, we have turned to the use of steel and concrete to take the place of the wooden supports so commonly used in mining. It is to be hoped that some more economical and practical means will be found that will prove equally effective and less expensive than the materials just mentioned. This is not to say that there will not be problems arising in mining practice where the use of concrete and steel will be the most practical and economical means to adopt, which is amply proved by experience.

STEEL AND CEMENT FOR PERMANENT CONSTRUCTION

Steel and cement construction is durable and must continue to be employed for the supports of the roof on main haulage roads that require to be kept open a number of years. These materials are also useful in the construction of car tracks, shaft bottoms, pump-rooms and other permanent work underground. Where the scarcity of mine timber will be most felt is at the working face, in rooms and short entries, and in pillar workings. For these purposes alone, large mines require timber in carload lots, and a constant supply is necessary to insure a maximum extraction of the coal, with a maximum degree of safety.

In view, then, of the coming shortage of mine timber, it is clear that a practical and economical substitute must be found, or improved methods of working adopted, that will not require so profligate a use of timber. The longwall method of mining, with its packwalls and its complete extraction of the coal together with the use of a minimum amount of timber, suggests a solution worthy of the most careful consideration, with a view to determine the conditions under which that method of mining can be successfully employed.

In mines where conditions require the use of timber in the workings, much should be accomplished by employing experienced timbermen and making every effort to recover all the timber possible, when drawing back the pillars and abandoning rooms and entries. At times it may prove advisable to drive rooms on a yardage basis, with wide pillars between them, and drawing back the pillars on the retreating plan, with a minimum requirement for timber. In most cases, however, the real problem will be met in the matter of drawing back pillars under a frail roof that demands adequate support to insure safety. Especially is this true where the roof pressure threatens to crush the coal in the pillars, and more timber is needed for their protection.

PRESERVATION OF MINE TIMBER

Another point worthy of consideration is the treatment of mine timber for its preservation. This includes not only seasoning the timber before it is taken into the mine, by adopting proper methods of stacking props on the surface and protecting them from the weather; but suggests the advisability of chemically treating mine timber, to render it less liable to decay and less subject to destruction by insects. The life of timber is greatly prolonged by immersion in creosote, oil, or a preservative salt solution. The cement gun has also proved an effective means of prolonging the life of mine timber. It should be stated here that green timber taken into the mines is subject to dry rot and rapid decay within a year or eighteen months, while timber properly seasoned and treated will last four or five years or longer.

An interesting reference has been made to forestry and the establishment of timber preserves. While it is not a paying investment to attempt to raise timber on a small acreage, there are numerous hilly and mountainous regions that are of no value except for the growth of timber; and this should be encouraged with proper care and attention. Every precaution should be used to keep fires from destroying the young trees. At the present time, it would seem that there is not enough attention given to the cultivation of timber tracts, outside of what is done by the government in this direction. Every state should have adequate laws for the protection of its timber lands. The damage done to timber tracts, especially second growth timber, is appalling. For the purposes of mine timber, trees, according to their size, usually attain sufficient growth in from ten to twenty years. Hence, mountainous regions adjacent to coal fields should be re-forested, which would seem to be a practical solution of the problem of the impending scarcity of timber. W. H. NOONE.

Thomas, W. Va.

Health and Industry

Letter No. 2—I read with interest the letter of John Rose, *Coal Age,* Feb. 19, p. 364, and feel like him that it is an impossibility for a man to do justice to himself if he is not healthy and strong. Many times the officials of coal companies are largely responsible for the unhealthy conditions that surround the mines, and which are so much in evidence in a great number of our mining towns; although I am glad to say this is not always the case. An instance comes to my mind just now, where the company would not permit a piece of loose paper to lie about the streets and yet there was much sickness in the town because of the unsanitary conditions within the homes.

What is needed along this line is an effective effort to educate the people in respect to their habits of living. We can clean up the town and the outside of the houses;

but if the inside of the home is neglected, all our efforts are in vain. It is the same way with our bodies. We can wash and put on clean clothes; but if we neglect to eat good wholesome food, all our bathing will be of no avail. In the same way, efforts to make workers strong and healthy, by cleaning up the town, will be useless, unless families are taught right ways of living.

Observation leads one to believe that a large proportion of the foreign-speaking people, in our mining towns, think that they are doing the right thing, but they need to be taught the first prinicples of health and good living. How often do we find a man, his wife and three or four children living together in a house with as many boarders, and only four or, at the most, five rooms in the house, while the windows are closed most of the day and night. Think what the condition of those people must be after spending a night in such an atmosphere.

Before closing, I want to refer to one point mentioned in Mr. Rose's letter. He quotes R. B. Babson as saying, "The need of the hour is more religion. . . . The solving of the labor situation is wholly a question of religion." It is strange that people often think that the discussion of this side of the subject has no place in the business of life; but my idea is, if our religion will not mix with our business, it is a poor thing to have around the house. The sooner we apply its principles to our everyday life, the better it will be for all concerned.

THOMAS HOGARTH.

McIntyre, Pa.

Shifting the Worker

Letter No. 4—Having had a similar experience to that described by "A. H," in the inquiry, *Coal Age*, Feb. 12, p. 327, I was much interested in his recital, although the circumstances connected with my own experience were somewhat different from those he describes. However, being a worker, I am proud to say that it has been my good fortune to rise, by degrees, to a position where I hire and discharge my own men and, I hope, treat them in a manner different from that which I received.

In my opinion, the mine superintendent or foreman who will allow a man to quit his employ just because he asks to better his conditions is far from being progressive and should not be retained in the employ of the company. I would fire such a man so quick that his head would swim.

The present unrest among the laboring classes, today, is owing to the high wages that are paid for different kinds of work. There are men who will quit a job for another where they can get more pay, regardless of whether or not they are fitted for the place. Others will start studying or training to prepare themselves for filling a higher position. A third class are satisfied to hang onto their jobs; and, while they envy the man that gets ahead, they have little ambition to make the attempt themselves.

The man who has too much confidence in his own ability often finds that he is not fitted for the position he would like to fill. Not infrequently, men get the notion in their heads that the company cannot do without them, only to find another man put in their place, because of their disregard of instructions.

When I hear a man boasting that he "cannot be beat," in the work he is doing, I always feel that, while the speaker may be a good man, there is a better than he, somewhere, and I have found this generally true. My own experience as a worker taught me to approach my boss with respect. I would talk to him as man to man; and I found this attitude made him trust me.

As an employer, I endeavor to treat my men with consideration, with due regard to their working conditions and wages. My motto is, Never ask a man to do anything that you would not do yourself, and I have found this is a good rule to remember when some difficult work is to be done.

THE SUPERINTENDENT NOT ALWAYS TO BLAME

It is not always a superintendent's fault that he cannot give a man everything he wants. I heartily endorse the words of the editor in reply to this question. He states that, "All cannot be firebosses, or motormen, or drivers. It is up to the worker to earn his advancement." A superintendent is unable to help a man who is too lazy to help himself. Such a one is worthless as a worker. He should lay down and let someone bury him. We must acknowledge the truth of the old saying, "Every man is the architect of his own fortune." At the foot of the ladder by which a few mount to success, there are millions of aimless, helpless ones waiting for someone to give them a hand. Many of these think that the world owes them a living.

In closing, let me say that my thought is that mine officials and their men should hold get-together meetings, for the purpose of becoming better acquainted with each other. Such meetings, if properly conducted, cannot fail to win the confidence of the men in their employers; and the response made by the men will increase the confidence of the employers in their men. Each will come to know the other better, and this will result in better and more efficient work in the mine.

In regard to shifting a worker, it is my opinion that mine officials should study the capabilities of each man in their employ and try, in every way practicable, to find the place where a man can do his best work; in other words, to find the work for which he is best fitted. Certainly, this question is one well worthy of discussion by superintendents and foremen as well as by their men.

Johnstown, Pa. SAK.

Dead-End in Trolley Haulage

Letter No. 6—The question was asked in *Coal Age*, Feb. 19, p. 367, by an assistant foreman of Rawl, W. Va., concerning how far a trolley wire should be carried toward the face of an active entry. In reply, let me say that, in development work, it is common practice to keep the trolley wire within such distance from the face as can be conveniently covered by the cable on the reel of the gathering locomotive.

In gaseous mines, however, special care must be taken to keep the wire on the fresh intake air, and never extend it beyond the last open breakthrough in any entry, nor within fifty feet of the neck of the first room in which pillars are being drawn.

The wire terminals should be protected by guardboards, or rubber hose, for a distance of three feet from the end. Care must also be taken to cut the end off and fasten it with an insulated turn-buckle.

Pikeville, Ky. G. E. DAUGHERTY.

[This letter will close the discussion "Dead-End in Trolley Haulage."—EDITOR.]

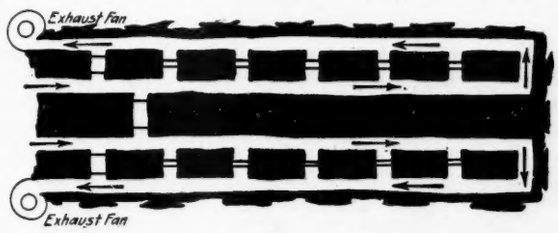
INQUIRIES OF GENERAL INTEREST

ANSWERED BY JAMES T. BEARD

Double Fan Circulation

We are desirious of obtaining some information regarding a double-fan circulation. As shown in the sketch, herewith, we have installed two fans of the same type and dimensions, exhausting the air from the mine. The two circulations, or air currents, are separate and distinct, one of the fans ventilating the right side of the mine and the other the left side.

Assuming that the two circulations are equal and each fan is passing 100,000 cu.ft. per min., what quantity of air could be expected to be circulated in the entire mine should one of the fans break down. The



doors are so arranged in the mine that they can be readily adjusted to turn the two circulations into two or more splits ventilating the entire mine.

Manifold, Pa. GEORGE HALEY.

In replying to this question, we will assume that the arrangement is such that when one fan is thrown out of commission or disabled the current produced by the other fan can be split so that half of the air will travel each side of the mine. Assuming that the power applied to the fan shaft remains unchanged and considering but one fan is operating and circulating the air in two equal splits that ventilate the two sides of the mine, respectively, it is evident that this fan is now working against double the amount of rubbing surface, and the area of passage is also twice what it was when the fan was ventilating one side of the mine only. But, for a constant power on the air, the quantity of air in circulation varies as the mine power potential (X_u); and we have in this case,

$$X_u \text{ varies as } \frac{a}{\sqrt[3]{s}}; \text{ or as } \frac{2}{\sqrt[3]{2}} = \frac{2}{1.26} = 1.587$$

That is to say, if a single fan will circulate 100,000 cu.ft. per min. on one side of this mine, when charged with the circulation for both sides of the mine, in two splits, representing twice the rubbing surface and twice the sectional area, the air volume will be increased 1.587 times the original circulation, which gives, in this case, 100,000 $\times$ 1.587 = 158,700 cu.ft. per min., equally distributed between the two sides of the mine.

Another method of solution is to consider the mine potential (X_u) as constant and the power reduced to one-half the original power, by the breaking down of one fan. In this case, the quantity of air in circulation varies as the cube root of the power and we have,

$$Q \text{ varies as } \sqrt[3]{U}, \text{ or as } \sqrt[3]{\tfrac{1}{2}} = \sqrt[3]{0.5} = 0.7935$$

That is to say, one fan working alone and representing one-half the power will circulate 0.7935 times the quantity of air circulated by the two fans, in the same mine, which gives 200,000 $\times$ 0.7935 = 158,700 cu.ft. per min.

Powder Flask in Pillar Working

An incident occurred today that I would like to relate for the benefit of *Coal Age* readers, and learn their comments regarding the same. At present, I am engaged in drawing back a straight pillar, under a strong top that crushes the coal, throwing it from the rib for a distance of several yards ahead.

The crushing effect of the overburden resting on the pillars is so great, that, at times, cars have to be loaded a considerable distance from the end of the pillar. It has been necessary to reinforce the pillar on which I am working by extending a row of posts along the ribs, the posts being set 5 ft. apart. Other posts are then put back of these as lagging to support the coal and hold it in place until it can be taken out as the pillar is drawn back. The pillar is 16 or 18 ft. in width and is reinforced in the manner I have described, for a distance of 30 yd. from the face.

While I was at work, today, the mine foreman and an inspector came into my place and, looking around, discovered my powder flask where I had laid it on the gob. I think the inspector was an insurance inspector. They asked me why I did not keep my powder flask in a cubbyhole. I told them that I thought it was safer where it was, under the conditions in my place.

My experience in drawing pillars, in straight pickwork, has convinced me that the practice I have adopted of stowing away my powder flask in a safe place in the gob, is far better than putting it in a cubbyhole cut into the pillar. When driving a room or entry, I agree that it is all right to put your powder flask away in a cubbyhole in the rib; also, such practice is safe when the conditions in drawing pillars are such as to allow of the use of electric machines; but, under the conditions described it is safer in the gob.

Houston, Pa. WILLIAM B. JACKSON.

If we understand the conditions described by this correspondent, it would be practically impossible to find a cubbyhole, in the rib of this pillar, where a powder flask would be safe. A place well selected in the gob would probably afford better protection for the flask than any niche or cubbyhole in a pillar that was being crushed by the weight of the overburden in the manner here described. We shall be glad to learn of the opinions and practice of others in this regard.

EXAMINATION QUESTIONS

ANSWERED BY
JAMES T. BEARD

Miscellaneous Questions

(Answered by Request)

Ques.—How would you proceed to enter a mine, for rescuing persons, after an explosion had occurred; and would you reverse the fan?

Ans.—As quickly as possible, call for volunteers and select and equip, under competent leadership, those who are more experienced and familiar with the mine workings. Having ascertained that the ventilating apparatus is still working, enter the mine on the intake air and proceed with caution. Make no advance ahead of the air, unless with approved and reliable breathing apparatus.

Only in extreme and exceptional cases should it be allowed to reverse the fan, as the reversal of the air current would confuse the calculations and expectations of the men entombed in the mine and might prove fatal to them by driving the gas down upon them from workings where it had accumulated.

Ques.—If a water gage shows a ½-in. depression, what is the velocity of the air, in feet per minute, when a cubic foot of air weighs 0.076 lb.?

Ans.—The formula giving the theoretical velocity of air, corresponding to any given head of air column (h), is $v = 60\sqrt{2\,g\,h}$. For a water gage of ½ in. and taking the weight of air as 0.076 lb. per cu.ft., the corresponding head-of-air column is

$$h = \frac{5.2\,w.\,g.}{w} = \frac{5.2 \times 0.5}{0.076} = 33.94\ ft.$$

Then, the theoretical velocity of air corresponding to this head-of-air column is

$$v = 60\sqrt{2\,g\,h} = 60\sqrt{64.32 \times 33.94} =$$
say 2,800 *ft per min.*

Ques.—Calculate the number of tons of coal in a ten-acre block, the seam being six feet in thickness and assuming the coal to have a specific gravity of 1.4 referred to water as a standard, taking the weight of water as 62.5 lb. per cu.ft.

Ans.—Since the number of square feet in an acre is 43,560 and the seam is six feet thick, the cubic contents of this seam underlying ten acres of land is $10(6 \times 43{,}560) = 2{,}613{,}600$ cu.ft. Again, taking the weight of a cubic foot of water as 62.5 lb. the weight of a cubic foot of coal having a specific gravity of 1.4 is $1.4 \times 62.5 = 87.5$ lb. Then, the weight of coal in this seam underlying ten acres is $(2{,}613{,}600 \times 87.5) \div 2{,}000 = 114{,}345$ short tons.

Ques.—The return airway of a mine has 1¼ per cent of methane in the ventilating current, the velocity of which is 220 ft. per min. while the size of the airway is 7 x 10.8 ft. The hygrometric reading gives the temperature of the dry bulb 50 deg. and that of the wet bulb 48 deg. F., while the barometer reads 25.7 in. If the output of coal is 150 tons in eight hours, what is the quantity of methane given off: (a) in cubic feet per minute; (b) per day; and (c) per ton of coal mined. (d) What is the weight of methane, in pounds and tons, per day?

Ans.—The sectional area of this airway is $7 \times 10.8 = 75.6$ sq.ft., and the volume of air passing is, therefore, $220 \times 75.6 = 16{,}632$ cu.ft. per min. Assuming that all the readings are taken in the return airway at the point where the percentage of gas is measured, the volume of methane in the air current is: (a) $0.015 \times 16{,}632 = 249.48$, say 250 cu.ft. per min.; or (b) $250\ (24 \times 60) = 360{,}000$ cu.ft. in a day of 24 hours. (c) The output of the mine being 150 tons per day, the volume of methane given off per ton of coal mined is $360{,}000 \div 150 = 2{,}400$ cu.ft.

(d) At a temperature of 50 deg. F. and a barometric pressure of 25.7 in., the weight of a cubic foot of air is

$$w = \frac{1.3273 \times 25.7}{460 + 50} = 0.0669 \text{ lb.}$$

Taking the specific gravity of methane as 0.559, the weight of this gas produced in 24 hours is 360,000 $(0.559 \times 0.0669) = 13{,}460$ lb., or 6.73 short tons. The reading of the wet and dry bulb of the hygrometer do not enter the calculation of the required data, as the moisture in the air does not materially affect its weight.

Ques.—If a weight of one-half ton is to be lifted by applying a force of 75 lb. to the end of a lever 4½ ft. long, how far must the fulcrum be from the point of application of the load, assuming it is between the load and the force applied?

Ans.—By a principle of mechanics, the moment of the load is equal to the moment of the applied force. Therefore, calling the distance from the load to the fulcrum x, the distance from the fulcrum to the applied force is $54 - x$; and the length of the lever being 4½ ft. (54 in.), we have, for the equality of moments:

$$1{,}000x = 75(54 - x)$$
$$1{,}000x + 75x = 75 \times 54 = 4{,}050$$

$$x = \frac{4{,}050}{1{,}075} = 3.76, \text{ say } 3\tfrac{3}{4} \text{ in.}$$

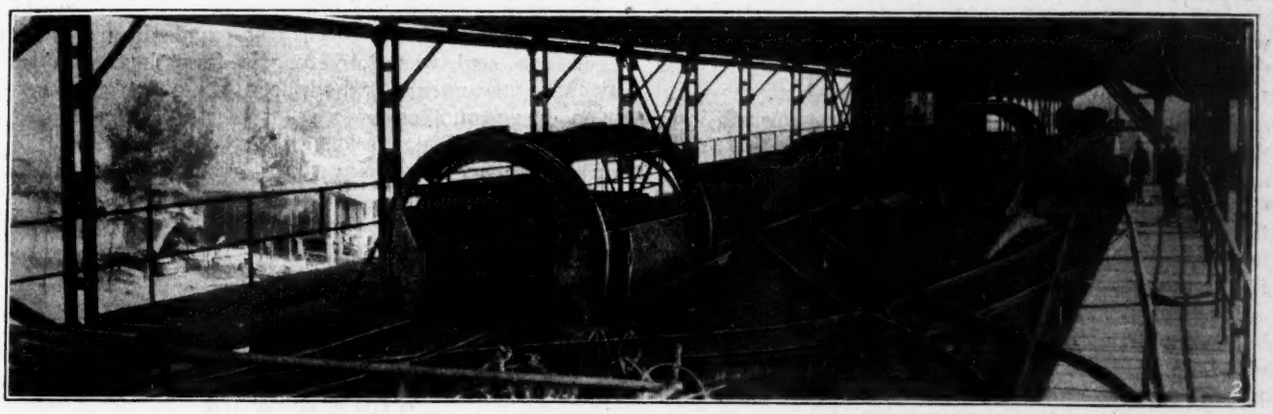
Ques.—What is the weight of 125 cu.ft. of carbon dioxide, at a temperature of 35 deg. F., at an atmospheric pressure of 13¾ lb. per sq.in.?

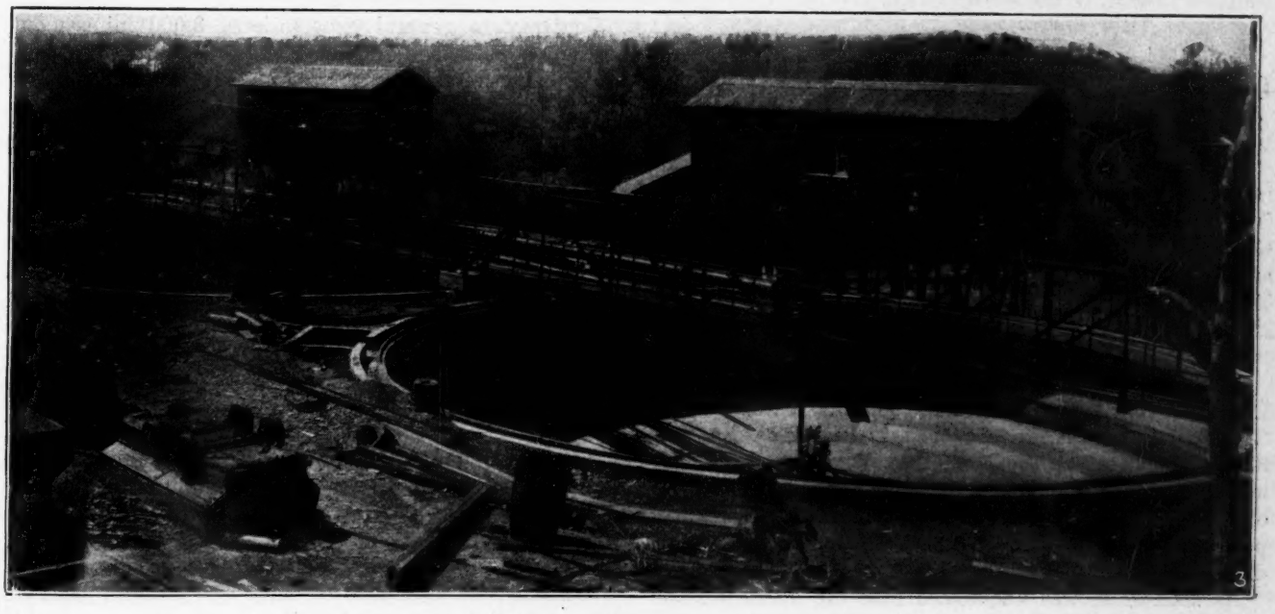
Ans.—In this case, the atmospheric pressure being given in pounds per square inch, the weight of a cubic foot of air is calculated as follows:

$$w = \frac{p}{0.37T} = \frac{13.75}{0.37\,(460 + 35)} = 0.07507 \text{ lb.}$$

Now, taking the specific gravity of carbon dioxide, referred to air as unity, as 1.529, the weight of 125 cu.ft. of carbon dioxide, at the given temperature and pressure, is $125(1.529 \times 0.07507) = 14.35$ lb.

SNAPSHOTS IN COAL MINING





At the Risco Plant of the Republic Iron and Steel Co., Palos, Ala.

(1) General view of the plant. (2) Tipple floor showing two rotary dumps. (3) Dorr fine-coal settling tanks.

Kansas Mine Leaders Defy Industrial Relations Court

ALEXANDER HOWAT, president of District No. 14, with others of his staff refused on April 6 to obey a summons to appear before the Industrial Relations Court upon an order issued by Judge Andrew J. Curren of the district court.

The other persons ordered to appear and refusing to obey were August Dorchy, vice-president, Thomas Harvey, secretary, Thomas Cunningham, traveling auditor and R. B. Foster, auditor. Mr. Howat made the following statement of his attitude:

"We officials of the United Mine Workers of District No. 14 do not recognize this Industrial Court. Let its members go down into the mines and dig coal and learn the business the same as we did. If they do not know the coal-mining business they are unfitted for the position and are wholly incompetent.

"Instead of a court composed of politicians and corporation lawyers, drawing a salary of $5,000 a year, the men should have been chosen from the industrial ranks as the judges who are competent to deal with the question in hand. We may be dragged into court, but we will absolutely refuse to answer any questions, as we do not recognize the court's authority or existence."

Mr. Howat estimated the strike involved between 1,500 and 2,000 workmen and declared that they had struck not under orders but "of their own volition." As a result of this contempt of court Alexander Howat and his associates were arrested and sent to Crawford County Jail, April 9, by the judge to stay there until they consent to appear as witnesses before the court and answer questions or until they are released on bond if an appeal is made to the Kansas Supreme Court.

Mr. Howat stated when arrested:

"Our position is unchanged. We stand where we stood. We refuse to testify before this court because we do not recognize the court. It is an institution founded to enslave the workingman."

Logan Operators Make 27-Per Cent Wage Increase Immediately Effective

The Logan Operators' Association of West Virginia is said to have been the first to put into effect the increase in wages recommended by the U. S. Bituminous Coal Commission. The association did not even await the result of the deliberations of the scale committees at New York. The Logan operators promptly adopted the wage increase though, not being in a union field, they are under no obligation to increase wages.

No announcement as to the increase made by the Logan association will be made pending action by the associations of other fields, such as the Kanawha, Big Sandy and those on the Norfolk & Western, the Logan association being in doubt as to the meaning of some of the recommendations in the coal commission's report and desiring to see how the operators of other districts will interpret them.

As soon as it was announced that the operators and miners of the Central Competitive Field had reached an agreement as to the 27-per cent wage increase, representatives of the operators of West Virginia and Kentucky announced that they also would put into effect the new contract in their territory. It is stated that in the Logan field wage increases granted since before the war aggregate 115 per cent, so that it is probable that the scale already paid is in excess of the 27 per cent increase recommended by the commission.

The only cessation of work on the part of miners in any organized field of West Virginia on or about April 1 was that occasioned by a celebration of Mitchell Day on April 1 in all union fields. The suspension of work, however, lasted only one day, miners returning to work on April 2.

Hines Quickly Settles Claims for Diversion of Coal

Director General Hines is taking an active part in the work of clearing up all outstanding obligations of the Railroad Administration to shippers of coal. With the ruling that the Director General could pay the 14 per cent increase pending, accounts for railroad fuel are being paid rapidly, and claims arising from the diversion of coal are being met much more rapidly than had been expected. In fact, settlements have been made for all the diverted coal with the exception of some 10,000 cars.

The great majority of the remaining claims present no unusual difficulties and prompt payments are promised. No coal was delivered, it is believed, before adequate arrangements had been made for payment. In a large number of cases railroad-station agents demanded certified checks.

It is known that the Federal Trade Commission is watching the situation with particular interest. Some operators fear that the present situation may furnish new arguments to those who look with favor on Governmental regulation or even the nationalization of the coal industry.

Strikers in Eastern Ohio Field Refuse to Return to Work

Contrary to general expectations, 3,000 miners out of the 14,000 in sub-district 5 of the eastern Ohio field, after being on strike since April 1, failed to report for work on Monday, April 5, though urged to do so by William J. Ray, president of the sub-district. The strike of the 3,000 mine workers, mostly foreigners, was not authorized by officials, who characterized it as an expression of the miners' dissatisfaction with the size of the wage advance which became effective on April 1. Miners in Belmont County, Ohio, on the Ohio River and on the line of the C. L. W. division of the Baltimore & Ohio R.R., were affected most by the refusal of the foreigners to return to the mines.

As soon as it became apparent that the foreign miners did not propose to return to work on Monday, April 5, as had been anticipated by President W. J. Ray of the sub-district, officials of the mine workers organization set to work to try to induce the men to report for duty. Owing to the fact that so large a percentage of the striking miners were foreigners the services of many interpreters were required. Officials of sub-district 5 hoped to have the miners back in the mines before the end of the week. Many operators believe that dissastifaction among the miners was due as much to the limited car supply, restricting working time to about half a week, as to disappointment over the size of the wage increase.

Herbert Hoover Addresses New York Section, A.I.M.E.

Attributes High Standard of Living to Engineers—Urges Collective Bargaining with All Workmen Represented

ADDRESSING the New York Section of the American Institute of Mining and Metallurgical Engineers on Wednesday last, April 7, Herbert Hoover said that he pinned his faith on engineers because they were as he expressed it idealists soaked with realism, and were not idealists of the impractical type who disconnected their ideas from the facts that had to be faced.

Asked like the other speakers to condemn the lack of civic responsibility in engineers he said he was unable to join with those who thought engineers neglected the duty they owed to the nation. The application of science to industry which was the work of the engineer had done more to advance the standard of living than any of the idealisms of political dreamers.

Troubles in the close of the eighteenth century arose from the demand for a better distribution of land, while our troubles in this, the early part of the twentieth century, were the outcome of the demand for a better distribution of the profits of industry. The worst way to meet those demands was by a complete refusal. We must admit of trade unions and of the collective bargain, but that bargain should be not with a part only of the operatives but with all of them whether union or non-union. Labor must be fully and not partially represented. While there is an obligation on the part of the employer to enter into a bargain there is at least an equal obligation for the employee to keep the bargain when made. As Mr. Hoover saw it, there was no disposition on the part of the workman to take over the plant, for the employee recognizes quite clearly that there are worries involved that he would avoid and abilities and experience needed that he questions his power to supply.

As for industrial courts, Mr. Hoover declared he did not favor them. Lawyers believed that law was the panacea for all human ills, but he was of the opinion that economic relationships could not be regulated by legislation. The mind of a lawyer is qualitative only.

The quantitative-qualitative mind of the engineer-manager is needed to solve such difficulties. The best kind of settlement is one made by employer and employee in council. Nine states have brought forward or passed bills for compulsory arbitration of disputes between workmen and their employers but in Mr. Hoover's opinion they will have no more success than Australia and other countries have had when experimenting with such legislation.

A guaranteed wage leads to guaranteed profit and this inevitably ends in a nationalization of industry. Commissions stifle capital and are usually more militant to labor than they are to the capitalist. The important consideration with any measure is: "Does it preserve initiative?" Only a few of us can be moved to action by a desire to afford a social service, and consequently an award for effort must be provided. This must be the touchstone by which we determine the value of any form of legislation: "Does it leave the desire of the individual to produce unimpaired?"

Other speakers were Thomas F. Darlington, secretary of the Welfare Department of the Iron and Steel Institute and former Commissioner of Health of New York City; Eugene Meyer, Jr., of the Department of Foreign Trade in the War Finance Corporation; Cornelius Kelley, president, Anaconda Copper Mining Co.; and W. L. Saunders, past president of the Institute and president of the Ingersoll-Rand Co.

Mine Workers Secure Hughes As Counsel in Conspiracy Case

CHARLES E. HUGHES, a former Supreme Court Justice, has been engaged by the United Mine Workers of America to defend the indicted officials who, with certain operators, are charged with having been guilty of a conspiracy in restraint of trade. One of the charges is that the "check-off" system of collecting union dues was established.

Most of the indictment charges are so general that it is of no advantage to refer to them. They allege violations of those parts of the Lever Act and its amendments which condemn the limiting of facilities for transporting, producing, manufacturing, supplying, storing or dealing in any necessaries; forbid the preventing or limiting of the supply or distribution of any necessaries; prohibit the preventing, limiting or lessening of the manufacture or production of any necessaries or the exacting of excessive prices therefor or the aiding or abetting the doing of any of the acts specified.

The eleventh count states that John L. Lewis and William Green prepared, issued, mailed and distributed a strike order and held a conference with other defendants concerning the cessation of the work of mining coal in Indiana and elsewhere, that from January to August of 1919 certain defendants refused to sell coal and demanded a price higher than the current price of that commodity, that a certain mine at Hymera, Ind., was closed down by J. C. Kolsem, that a copy of an agreement between the Clinton Coal Co. and the Fallenz Coal and Dock Co. was sent to H. M. Ferguson and distributed by Jonas Waffle, that Walter D. Talley made a contract with the Citizens Mutual Heating Co., Terre Haute, for 10,000 tons of coal at a price of $2.05 at the mines, the following proviso being contained in the contract: "This condition means that if there is a reduction of any of the items mentioned during the term of this contract, the buyer is to have the benefit of them, and if there is an increase in any of them, the buyer is to pay such increase, but it should be fully understood that during such times as prices are fixed by the U. S. Government, nothing contained in this condition shall be construed on the one hand to authorize the exaction of any price in excess of the Government's maximum price, nor on the other hand to require delivery by the seller at a price below the cost of production of coal, as shown in the required report to the Federal Trade Commission, plus a reasonable profit . . ."; that the defendant caused to be shipped and delivered to the said company under the contract coal for which $2.30 per ton was charged; that Walter D. Talley refused to sell or ship coal to the Citizens Mutual Heating Co. for storage purposes; that Warren J. Smith charged 25c. per ton in addition to a contract price; that the "check-off" system of collection and payment of dues, assessments and benefits of miners to their separate unions was put in force.

Governor Allen May Seize Mines

WITH 11,000 mine workers idle as a protest against the incarceration of Alexander Howat for contempt of court, Governor Allen is meditating the taking over the mines of Kansas, the public of Kansas being wholly unfavorable to the mine workers of that state who have been guilty of continued violation of contracts and have had a disposition to strike for every cause and no cause.

Mr. Howat does not spare the head of the state, whom he describes as "a skunk of a governor," and he declares that "we [the mine workers] won't recognize this court," meaning the new court of Industrial Relations. Governor Allen is, however, determined to get the mines back into operation. On April 12 he said: "In the event that it should be necessary [for the state] to operate the mines I believe at least 40 or 50 per cent of the workers in the district would be loyal to the state and would work for us. I do not want to talk before I act but the industrial court law is going to be enforced. The man or woman who violates it will be prosecuted."

The officials of the state expect that wholesale arrests will precede the seizure of the mines, officials who are to blame for the suspension of the work at the mines being charged with felony and those who have quit work being charged with a misdemeanor. The industrial court on April 12 issued subpoenas for men whom they desired to question and the court will put in jail all those who mistakenly follow the lead of Alexander Howat.

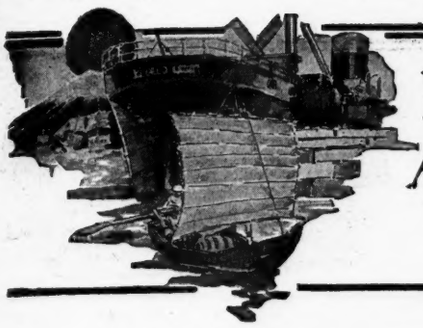
It seems from evidence that Howat has been using union funds to spread Communist propaganda. Certain it is that the mine workers include many men who have I. W. W. affiliations. As there is risk of violence if the mines are operated by the state it will be necessary to protect the workers by troops, and these will be called out.

It is estimated that 90 per cent of the mine workers in Kansas are on strike. Sheriff Webb allowed Howat to speak for an hour to the assembled crowd who thronged around the entrance to the jail and cheered his utterances. The men were orderly and carried American flags and even went so far as to pass a vote of thanks to Sheriff Webb for the courtesies shown to them and to Alexander Howat in allowing the latter to address them from the balcony of the Crawford County jail. The mine workers of Kansas cannot believe a conspiracy in restraint of trade to be a crime.

Many Are the Woes of the Mine Foreman

HANDS UP! ALL YOU FACE BOSSES!!
ONE MAN PIT COMMITTEE
WELL I'LL BE * * ?!!
WE HAVE A HUNDRED AND FIFTY HOURS COMING THIS WEEK!
MINE MGR.
GANG NO. TWO.
I GOT FOURTEEN HOURS ONE DAY FOR TAKING UP BOTTOMS!
YOU'LL PLAY H— GETTING IT!
MACHINE BOSS
LOADER
I'VE GOT 13 HOURS COMING FOR SPLICING CABLE.
MACHINE MAN

CARL SCHOLZ DECLARES THAT THIS IS HOW THE JOB OF MINE MANAGER LOOKS TO THE LAMPMAN



FOREIGN MARKETS AND EXPORT NEWS

France's Coal Supply Awaits New Pumping Machinery

Trade Commissioner Charles P. Wood reports that it has been estimated that 60 per cent of the French pre-war production of coal came from the territories that were invaded by the Germans. If these coal mines had not been damaged by actual fighting, they were worked as long as possible by the Germans and deliberately wrecked before being given up. To compensate for this loss, the Peace Conference awarded to France the output of the Saar Basin in Germany, but this is not enough and the annual deficit in France is estimated at 20,000,000 tons.

As the consumption of iron ore in France and Germany is controlled by the coal supply, which for some time will be short, the necessity for the earliest possible rehabilitation of French coal mines is evident. This will be pushed to completion with all possible speed, but much remains to be done before it will be necessary to place orders for new mining machinery.

The destruction of coal mines occurred in the departments of Nord and Pas-de-Calais. The center of this mining district is Lens, which was the scene of terrific fighting. This city, which had originally 30,000 inhabitants, was leveled to the ground and flooded. It was part of the German front line until 1918 and was constantly under fire long before the decisive battles that resulted in its capture by the Allies.

Many mines around Lens suffered the same fate as the city, in that all equipment above ground was demolished by artillery fire, but every mine that could possibly be operated on either side of the line was kept in operation. When it became necessary for the Germans to retreat, they put the remaining mines out of service with the same thoroughness and scientific efficiency that characterized their operations generally.

From the surface it can be seen that all the mines are flooded and all superstructure has been wrecked. Further observation will be impossible until after the water is out of the way. It is thought that these mines were not flooded entirely from the surface but that the shaft casings were wrecked from below by demolition charges cleverly placed, and that pumping out will have to proceed at a rate beyond the rate of inflow until after the wrecked portion of the casing has been exposed for repairs. This greatly increases the magnitude of the pumping problem. Hydro-electric power not being available in the Lens area, pumping equipment must include large power plants.

Plans for pumping out the mines have proceeded with celerity, and pumping equipment has been ordered. It is estimated that at least two years will be required for pumping out mines so that the installation of machinery can begin. This will give French machinery manufacturers the opportunity to build the machinery required.

There may be emergency orders for mining machinery in other mining districts which are being worked intensely to supply the present shortage. There have been reports of badly worn cables and demand for new haulage equipment. Inquiries for pneumatic locomotives also have been in evidence.

American engineers have commented on the excellence of French mine hoists. This machinery is built in France, and probably all the new hoists for the wrecked mines will be built in France, except for such purchases as the French may consider it advantageous to make in Germany.

The tonnage of French coal mines seems low compared with corresponding results obtained in America, and this may have been misleading to some who thought that the comparatively low French tonnage could be increased by the installation of American equipment. The French problem is to take out all of the coal from a thin seam. American methods would result in too much waste both under ground and above ground. Economy is the primary consideration in French practice. Thin seams (some of them at great depth), refilling and other conditions peculiar to French coal mines prevent extensive blasting, the use of undercutting tools and other American methods designed primarily to increase tonnage.

Government Control of Mines Instituted by Belgium

A Belgian royal decree is published instituting a commission of 10 persons, under the direction of the State Department of Mines, to study the methods to be applied to the available coal beds—that is to say, those not yet conceded—and the status of the mines to be operated by the Government. The latter are known as the Wandre coal mines, which are at present being operated under sequestration.

An experiment in Government direction is to be made with these first, and will take place as soon as the Government's bill regulating sequestered property is passed. The decree points out the necessity of having a well-established program regarding mines, in view of their importance to the country. The question of nationalization and other problems of operation will be considered.

Two groups of mining lands are actually available for Government control—reserves in the basin of Campine and a new basin in Hainaut—for which there are numerous demands for concessions. The commission is composed of two engineers and a jurist of the mining administration, two representatives of the mine owners, two of workers' associations, and a delegate from each of the ministries interested, i. e., Finance, Railroads, and Economic Affairs.

Fuel Situation in South China Continues To Be Acute

There seems to be little prospect of any easing of the South China fuel situation, Consul General George E. Anderson, Hongkong, reports, although during the past year the supplies of coal from Japan, which controlled the trade entirely before the war, were again brought up to something like their former comparative proportion of the trade of the port and imports of fuel oil increased greatly. However, prices continue very high and many industries in Hongkong and South China continue crippled by a lack of fuel at a reasonable price.

The total imports of coal for the year 1919 amounted to 920,107 tons, valued at $15,162,758 (at normal exchange of the pound sterling), as compared with 678,852 tons, valued at $12,163,190, in 1918. The exports amounted to 214,968 tons, valued at $2,969,670, as compared with 196,291 tons, valued at $3,240,595, the year before. The imports were derived from the various producing countries as follows:

Country of Origin	1918 Long Tons	1919 Long Tons
North and Middle China	269,780	128,360
Japan	360,754	658,572
Indo-China	48,118	120,806
Other Countries	200	12,369
Total	678,852	920,107

Of the exports in 1918, amounting to 196,291 tons, South China took 142,270 tons, while in 1919 South China took 209,609 out of the 214,968 tons exported. The rest of the imports went into local industries or ship's bunkers, by far the larger portion going into ships.

At present the local situation is improved so far as supplies are concerned, for there is a freer movement of coal from the Japanese mines and there is plenty of tonnage to move it at current rates of freight, which, of course, are very high. Cheap, soft Japanese coal—little more than "slack"—retails for from $26 to $32 gold per ton.

Imports of fuel oil during the year amounted to about 85,000 tons compared with 38,596 tons of the year before. The much larger portion of the imports of liquid fuel was for bunkering vessels, and of the imports during the past year about 21,000 tons were imported from the United States almost exclusively for American vessels, which have to depend upon supplies of oil from Sumatra and Borneo, whence most of the Hongkong supply now comes.

Larger imports have been prevented by a lack of tank tonnage available for bringing supplies from Sumatra and the United States and by a shortage of tank capacity in Hongkong compared with the demands of the trade. It is understood that important developments in storage facilities for liquid fuel in the plants of the large concerns importing fuel oil in Hongkong are to be made during the current year, and it is anticipated that the situation will materially change before 1921.

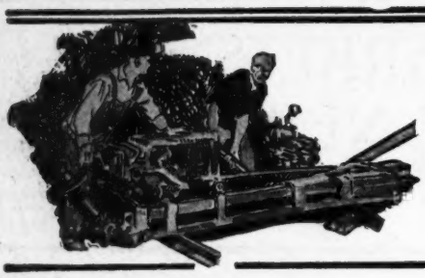
Panama Canal Quotes Prices on Coal and Fuel Oil

At the Panama Canal coal is being supplied to steamships, including warships of all nations, delivered and trimmed in bunkers, at $13.50 per ton of 2,240 pounds at Cristobal and $15.50 at Balboa. For ships in transit through the Canal, which are directed to take coal at Balboa, for the convenience of the Panama Canal, the quotation is $13.50 per ton at Balboa. For ships taking less than carload lots from plants or less than 25 tons from lighters, the price is $15 per ton at Cristobal, $17 at Balboa. Crude fuel oil is delivered to vessels at either Cristobal or Balboa for $1.50 per barrel of 42 gallons. Diesel oil is not sold by The Panama Canal, but may be obtained from private concerns at approximately $3 per barrel. Cable arrangement should be made in advance of arrival of vessel.

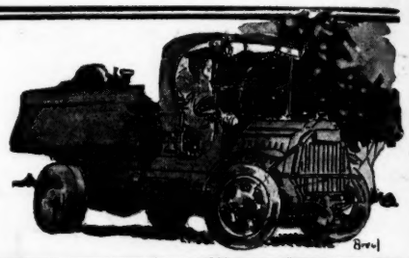
Europe Imports Alcohol for Fuel Owing to Coal Shortage

Scarcity and high prices of coal and petrol in European countries, and incidentally enforcement of the Eighteenth Amendment, were responsible for large exports from the United States of alcohol for fuel and industrial uses during January, 1920. Exports for the month, mostly to Europe, were 6,467,728 proof gallons, valued at $2,065,539, an average of 32c. per gallon. The countries of destination are shown below:

Exported to—	Proof Gallons	Value
Belgium	218,427	$79,650
Denmark	167,527	59,293
France	10,450	5,500
Greece	285,107	91,777
Italy	2,483,078	605,060
Malta	32,815	13,160
Netherlands	2,026,524	655,952
Norway	37,816	18,251
Switzerland	34,042	24,400
Turkey in Europe	215,270	85,241
United Kingdom	35,366	36,728
Canada	208,520	103,437
Costa Rica	38,988	17,000
British West Indies	28,128	32,204
Dutch West Indies	5,408	2,660
Dominican Republic	9,361	5,593
Aden	3,500	3,300
China	19,400	8,830
Japan	10,216	11,285
Russia in Asia	18,392	7,000
Turkey in Asia	221,985	95,271
New Zealand	41,236	10,046
French Africa	37,700	16,277
Italian Africa	9,663	3,880
Morocco	4,280	2,200
Egypt	251,023	66,275
All other countries	13,506	5,269
Total	6,467,728	$2,065,539



COAL AND COKE NEWS



What Happened in March

March 1—Franklin K. Lane resigns as Secretary of the Interior. He is succeeded by John Barton Payne, chairman of the Shipping Board, and formerly general counsel of the Railroad Administration [XVII, 362]—Federal control of railroads comes to an end with their return to the owners.

March 3—The New York section of the American Institute of Mining and Metallurgical Engineers meets and hears paper by E. A. Holbrook on "Coal Versus Ore Concentration" and discussion by members [XVII, 495]. Shipping Board drops fleet operation. Turns over all its vessels to private operators as agents; cancels all its tariffs. Managers will be allowed to fix own rates to meet conditions—Frank C. Smither dies at his home in Reading, Pa. He was president of the Reading Iron Co. and a director of several coal companies [XVII, 627].

March 5—Walker D. Hines outlines a new distribution policy in a statement which says that coal is to be diverted in the future only in cases of the most absolute necessity. New regional committees are appointed to look after diversions in the different regions. The Central Coal Committee, at Washington, continues general control through committees [XVII, 509].

March 6—Mining men of McDowell County, W. Va., organize the McDowell County Mining Institute with charter membership of 51 [XVII, 571].

March 8—Twenty-second Annual General Meeting of Canadian Mining Institute assembles at Toronto, Can., and plans to continue in session on two following days. Papers read and discussions following, commented upon [XVII, 545-550].

March 9—United Mine Workers of America makes statement that nothing short of substantial increase in wages and working conditions will be acceptable [XVII, 564]—Anthracite operators and miners meet in New York City for consideration of new wage agreement to become effective April 1. Demands are referred to a subcommittee [XVII, 561-562].

March 10—President's Bituminous Coal Commission makes report and dissolves. Chairman Robinson and Rembrandt Peale hand majority report to President Wilson. John P. White still working on his minority report [XVII, 563].

March 11—President Wilson appoints Walker D. Hines, an agent for service in lawsuits growing out of Federal control of railroads—Indictments are brought against 125 bituminous operators and miners, at Indianapolis, Ind., charging conspiracy under Lever Act [XVII, 564].

March 11-12—Important meeting of the Smokeless Coal Operators' Association of West Virginia is held in Washington, at which William H. Taft's opinion relative to Federal control of the coal industry is read.

March 12—William D. Owens dies at his home in West Pittston, Pa. He was an official of the Lehigh Valley Coal Co. for over 30 years [XVII, 682]—Representative of wholesale coal dealers, asking restraining order against W. D. Hines and Central Coal Committee from further interference with distribution of coal, is notified of postponement until March 19.

March 13—Estimated that 800,000 French coal miners are on strike [XVII, 563]—Hearing is held by commission appointed by Governor Cornwell of West Virginia, to probe conditions in the Guyan coal region and to investigate attempted invasion of Logan County last September [XVII, 611].

March 16—At session of Anthracite Wage Conference in subcommittee of operators and miners, in New York City, earnings of miners and 60 per cent wage increase are discussed [XVII, 620-621].

March 17—New York Wholesale Coal Trade Association holds luncheon in New York to discuss various phases of the Lever Act [XVII, 616-617].

March 18—Coal operators of West Virginia and Kentucky and the directors of the Chesapeake & Ohio R.R. fail to agree on plans for better handling of tonnage along line of this road [XVII, 681]—Senator Frelinghuysen introduces three bills in the Senate, one of which provides for a Federal coal commissioner to control organization, administration, transportation and mining of coal.

March 19—President Wilson issues an order suspending price regulation under the Lever Act, but continuing in force the rules relating to the operation of the Tidewater Coal Exchange [XVII, 654]—President Wilson transmits a statement to operators' association and union officials, approving report of his Coal Commission [XVII, 657]—Upper Potomac Coal Association organizes, being a reorganization of old Upper Potomac Coal Operators' Association [XVII, 681].

March 20—Representative Kendall, of Somerset County, Pa., denounces, on the floor of the House, the continuation of Government prices on coal [XVII, 655-656].

March 24—Anthracite operators' wage conferees in New York agree to make the settlement operative from April 1. Miners agree to remain at work pending settlement of negotiations. Efforts to establish the closed shop and the "check-off" are defeated [XVII, 669-670]—New England retail coal men favor price control in meeting at Springfield, Mass. Papers are read [XVII, 672-673].

March 29—President Wilson orders control of coal by Governmenetal agencies to cease, on and after April 1, 1920—Bituminous operators' and miners' representatives at New York, agree to accept the majority report of the President's Coal Commission. The miners agree to remain at work pending adoption of a new wage agreement [XVII, 672½].

Charleston, W. Va.

Production Hampered by Mitchell Day—Also by Car Shortage—Bulk of Smokeless Goes East—High Volatile West.

The principal factor, aside from a continued car shortage, in lowering production in this area, in the weekly period ended April 3, was the celebration of Mitchell Day. That cost virtually an entire day's production in the union fields tapped by the Chesapeake & Ohio R.R., since there was little work done by any union miners on April 1. The first of April was the only day on which the miners did fail to work despite the fact that the old wage scale had expired and no new wage scale had been agreed upon by the operators and miners of the organized fields in this section of the state.

There was, of course, the usual shortage of cars, but even car-shortage conditions were reversed in this respect; for although the supply at the advent of the week was somewhat under the supply for the early part of the previous week, on the other hand the supply for the remainder of the week was fairly well sustained.

Even with the improved supply, mines were hardly able to work more than 60 per cent of full-time capacity, owing to the shortage of cars. On the first day of the week the output was only 154,600 tons, nearly 3,100 cars being furnished mines on the Chesapeake & Ohio system. When the number of cars furnished dropped to around two-thirds of Monday's car supply, then production fell in proportion. A large supply of cars was not necessary on Thursday, the first, but of course April 1 made no difference in non-union fields nor even in the "open-shop" section of the organized New River field.

Two-Thirds of High Volatile Goes West

While there was a reasonably large movement of high-volatile coal eastward, principally to tidewater, it is estimated that fully 70 per cent of the output of high-volatile coal was going to inland western markets during the week ended the third. There was a slight increase, in the actual export of coal produced in this area, during the first three days of April, but the Chesapeake & Ohio did not appear to be able to dump its tidewater coal with any degree of promptness.

While it is true that the Lake season, which it is believed will be ushered in by the fifteenth unless weather conditions delay the opening of the season, may increase the demand somewhat for coal in this section, nevertheless many operators incline to the belief that under the present large output, there is not as much of a scarcity of coal as is generally pictured and that, therefore, export restrictions should be removed.

Until April 1, contract negotiations were being held up principally by producers. After the first and during the first three days of April, contracts were consummated on a somewhat larger scale. While producers had been holding up the consummation of contracts, in order to stabilize the market and prevent speculation, the general belief expressed was that the best way to avoid speculation and sky-high prices was to contract their coal, so that a large volume of free coal might not be left with which to speculate just as soon as the new wage agreements would make it possible to figure costs.

New River Output Increases

Dents were made in production, to some extent, both by a shortage of cars and by a general suspension of mining activities on April 1 in the New River field. It might have been possible, but for the holiday on the first, however, to have increased production slightly over that of the weekly period ending the twenty-seventh, since after Monday the car supply was holding up better than it had been during previous weeks. With many open-top cars being utilized on the Chesapeake & Ohio, in handling army trucks, slag and cinders, the supply of empties for the mines was of course reduced.

Of the coal moved from the New River field, the bulk of it was shipped eastward, principally to tidewater; yet with the permit system still in force as to exports, overseas shipments were still limited and moreover inefficiency in dumping at Newport News, also hampered the exporting of coal to a certain extent. After the first of the coal year, there was a somewhat larger volume of contract business, and it is now believed that little smokeless coal will remain for the open market.

Although the car supply in the Kanawha field at the outset of April was far below normal, it was fairly well sustained throughout the week and it might have been possible to increase production somewhat over the week ended the twenty-seventh if there had not been an almost total suspension of mining operations for the day April 1.

Slow Dumping at Tide Delays Loading

Fully 70 per cent of Kanawha coal was consigned, during the week ended the third, to markets in the West. Of the coal shipped eastward, most of it was for tidewater, and it was said that export permits were being somewhat more freely issued, yet slow dumping at tide was retarding the loading of vessels to some extent.

In the last three days of the week more

coal from the Kanawha field was disposed of under contracts covering the yearly period. The prevailing price for mine-run in the Kanawha field, it was stated, was about $4.00 a ton for coal for the domestic market, export coal averaging about 50c. a ton more.

Bluefield, W. Va.

Norfolk & Western Strike Halts Output—Mines Lose Half Week—Miners Go to Farms—Other Roads Improve Service—Exports Larger.

Production almost reached the zero point in such southern West Virginia coal fields as were dependent upon the Norfolk & Western R.R. as the new coal year was ushered in, owing to a strike involving about 12,000 men. Approximately 3,000 clerks have gone on strike, and various shop crafts on the system declared a sympathetic strike about April 1; the strike of the clerks began on Friday, March 26, and the disturbance soon spread over the whole system.

At first the checking of baggage was abandoned. For a few days temporary clerks made it possible to weigh coal passing over the various scales on the system, but by the middle of the week, it had become almost impossible to even handle coal, so that during the last three days of the week, there was a decided lull in production throughout all the southern West Virginia regions. From Wednesday until Saturday virtually no eastbound coal was moved. In fact all freight traffic to the east after Wednesday was suspended.

The road was partly successful in moving freight from Bluefield and points west of Bluefield for a day or so, but on Friday it became necessary to annul all freight service. While a few empties were moved into the various districts Thursday night, the supply was extremely meager, and it was found impossible on Friday, the second, even to move such coal as had been loaded. Between Thursday night and Saturday morning no empties were furnished any of the fields and of course it was impossible to load any of the cars furnished on Saturday.

General Disturbance Due to Railway Strike

Thus it will be seen that virtually a full half week was lost just at a time when transportation facilities seemed to be gradually undergoing improvement. But for the strike, it is believed it would have been possible to eclipse the output of the week ended March, 27, that is if the improvement in the car supply for that week could have been taken as a criterion of what might have been expected; there having been about a 60 per cent output during the earlier week in question with evidence of further improvement up until the time the strike made it impossible to operate at all.

While losses from a labor shortage have not so far been apparent to any appreciable extent, yet on April first miners owning farms began to desert the mines for their farms, and as the car supply underwent improvement then the labor shortage was felt, and it began to be apparent that the most serious problem a little later in the season would be a serious shortage of miners, unless it is possible to recruit additional miners from other occupations.

If one may judge from their activities in southern West Virginia, speculators have more to do with advancing prices than producers as the latter are not encouraging fancy prices and are continuing to handle coal through former selling agencies, instead of taking contracts from speculators and jobbers who offer a premium. It is pointed out by operators that it is the buyers of coal and not the producers who are responsible for hoisting prices. After the first of April there was a rather marked increase in the volume of 1920 tonnage placed under contract but prices governing such contracts were along conservative lines. The export business has attained a somewhat larger volume insofar as southern West Virginia mines are concerned, though still restricted by permits.

Pronounced Improvement on the Gulf

A pronounced improvement in the car supply on both the Virginian and the Chesapeake & Ohio railroads in the Winding Gulf field, during the week ended April 3 was observed. Mines on the Virginian during the period mentioned were able, on an average, to operate five out of the six days or about 80 per cent of the time. Transportation facilities afforded by the Chesapeake & Ohio made it possible for the mines on that road to operate about four days out of the six. With exports running somewhat heavier in volume and with prices commensurate with increased production costs obtaining, conditions were extremely satisfactory in the Winding Gulf Region at the beginning of the coal year.

Coal loaded in the Tug River field during the week ended April 3 totalled 68,000 net tons, a drop of 14,000 tons below the loading of the previous tie-up of the Norfolk & Western due to the strike initiated by railway clerks. From a close-to-normal loading of 330 50-ton cars on Monday, March 29, the loading dropped to 38 cars by the following Saturday, and on Monday, April 5, only 17 cars were loaded in all the mines of the Tug River field.

Although the strikers were all to be reinstated by Sunday, the condition they had created will take a number of days to untangle. The trouble on the Norfolk & Western progressed just far enough and involved a sufficient number of shop-men and yard men at important points and terminals, to halt the movement of coal and hold up incoming empties. Empties that would ordinarily have come into the Pocahontas region were diverted elsewhere, and normal relations had not been restored with connecting lines.

Pocahontas Heavy Loser from Railway Strike

The loading of the first full week of April was certain to be even lower than that for the week ended the third, although it was hoped that by the tenth conditions might have again been somewhat normal. No empty cars were delivered in the Tug River field on April 1 and 2, and by the second of April freight movement of all kinds had been entirely suspended on the Norfolk & Western, so that no coal to speak of was loaded in the field during the last three days of the week.

Being a larger field, losses suffered in the Pocahontas region, in the week ended April 3, were even of larger proportions than those in the Tug River field; the strike of clerks and of shop crafts on the Norfolk & Western, crippling production for several days and completely wiping out the gains made toward the end of March.

Increases in the export tonnage have been observed since April 1, but export shipments are still far below the insistent demand. Progress is being made in completing contracts for the year's tonnage although a large tonnage is being reserved for the open market.

There was a decided decrease in the production of mines in the Kenova-Thacker district, during the period ended the third, owing to the interruption to Norfolk & Western operations through the strike of railroad clerks. In the week previous to that ended the third, the Kenova-Thacker field had a production of nearly 140,000 tons, or about 60 per cent of capacity. So far as can be learned the output of that week was cut in two because of the strike. Such a marked decrease was unfortunate in view of the heavy demand and the increased price being paid for coal. Even though the exporting of coal was limited, it was impossible for producers to fully meet the demand for overseas shipment.

Huntington, W. Va.

Logan Output 40 Per Cent—Few Cars—Coal Demand Insistent—Coal Goes to Inland West and to Tide.

The beginning of the new coal year brought no relief to operators of the Logan field through any increase in the car supply; the output in the region reaching only about 165,000 tons, as against 172,000 tons for the previous week; losses from railroad disability alone being not far from 250,000 tons for the week. In other words production was not much more than 40 per cent, in the face of what may be termed an insistent demand, and during the first three days of the second week of the month, still further losses in production through a limited car supply, were observed.

While inland west markets were securing more than half the output of the Logan field, there was still a steady movement of Logan fuel to tidewater, much of it for export, with restrictions as to export shipments much less rigid than they had been.

Pending definite action by scale committees in other non-union fields, it had been impossible for producers to arrive at any definite conclusion as to the actual cost of production. For that reason many producers, up until April 3, had held aloft from making contracts, desiring to determine exact production cost before contracting for deliveries over the period of a year at any certain price.

With the opening of the Lake season about April 15, Logan producers will look forward to the movement (during the season) of a large tonnage to Lake ports, and an effort was being made through a conference of Lake shippers, held at Cincinnati on April 8, to devise ways and means for the pooling of coal at Lake points in order to avoid holding coal at the docks.

While operations in the Logan field were not affected on April 1 by the observance of Mitchell Day, nevertheless, production was on a lower level than during the previous week; the supply of cars from the very beginning of the week being leaner than had previously been the case. On April 5, 6 and 7, the supply was even worse. Logan loadings on the fifth, for instance, totaled less than 40,000 tons as against normal Monday loadings of 52,000 tons.

A compilation of loading figures for all fields reached by the Chesapeake & Ohio, for the week ended April 3, discloses the fact that during that period 572 cars less were handled than for the week ended the twenty-seventh, the loss in tonnage moved amounting to 28,600.

Fairmont, W. Va.

Output Drops in Northern West Virginia—Coal Confiscation Continues—Export Shipments Increase.

Mines of northern West Virginia did not get away to a very auspicious start on the new coal year, from a transportation standpoint, as a scarcity of cars made it impossible to equal the output for the week ended the twenty-seventh, when, with a production in the Fairmont region alone of 308,550 tons of coal, the best week in two months was enjoyed. What also contributed to bring production to a lower level, was almost complete idleness at the mines on April 1, observed by union miners as Mitchell Day.

The car supply at various times in the week fluctuated from 30 to 85 per cent. The quota never reached the last named maximum except on Monday when for instance there were in excess of 1,500 cars available for loading on the Monongah division of the Baltimore & Ohio R.R. However, even that supply was somewhat reduced by late placements. On the same date the Monongahela R.R., had only a 44 per cent car supply for its mines. In other northern West Virginia regions the supply averaged anywhere from 50 to 80 per cent on Monday.

Coal Seized at Tidewater

That the confiscation of coal had not been altogether abandoned, became apparent when instances of seizure of fuel by the Baltimore & Ohio, at both Brunswick and Curtis Bay, were reported at Fairmont, confiscations being made of export shipments. Of course such confiscation was not on as large a scale as had been the case during the early part of March, yet it was apparent that railroads were helping themselves to coal at least to some extent before the end of Government distribution of coal, though of course it will be impossible to tell just how coal was confiscated during the last few days of Government control.

There was a noticeable increase in the eastern movement of coal from northern West Virginia points, the increase being due largely to increased tidewater shipments. Likewise with the increase in tidewater shipments, there was an increase in exports, it is believed.

While the number of cars sent to Curtis Bay from the Monongah division, during the week ended the twenty-seventh, was slightly in excess of 1,000, during the following week at least 200 more cars of coal were consigned to tidewater. With a growth in the tidewater movement, there was a decrease in the western movement, Ohio and Michigan points getting less northern West Virginia coal. When the Lake season opens, however, there will be a material increase in westbound coal.

Railroad-fuel shipments were rather heavy, especially during the early part of the week ended the third. Northern West Virginia operators are endeavoring to work out a plan, under which railroads may be able to secure an adequate fuel supply. However, price may prove to be a stumbling block.

Prices advanced somewhat in northern West Virginia fields, as was natural, after the first of the coal year, not through any special effort on the part of producers but

because of the heavy demand for coal. Following the agreement on a wage scale, contract negotiations were in many instances consummated, buyers having been exceedingly thick in the Fairmont and other northern West Virginia regions for several days previous to the end of the coal year.

There was produced in the Fairmont region, during the month of March, a total of 1,345,100 tons of coal and 432 cars of coke.

Ashland, Ky.

Output Half of Capacity—Normal Conditions in a Month — Preferential Car Supply Continues.

Production in the northeast Kentucky field, for the week ended April 3, was 51 per cent of potential capacity; the output being 133,840 tons, out of a possible 262,000 tons, the total production loss amounting to 128,085 tons, or 49 per cent of capacity, 120,195 tons of such total being attributable to car shortage. The output of 133,840 tons represents an increase of 11,000 tons over the preceding week, the result of a betterment in the car supply on the Louisville & Nashville, the above production surpassing the output for the corresponding week of 1919, by 30,000 tons.

Production for the entire month of March was 585,000 tons, which, compared with a total of 408,000 tons in February and 517,000 tons in January, indicates that the railroads are gradually returning to an improved condition. By the end of another month they should find themselves practically normal, especially if the Lake shipments reach such proportions that a much better average movement will immediately result.

Satisfactory Outlook for Next Six Months

Eastern Kentucky operators, therefore, contemplate that unless the plowing season results in no unusual depletion of their forces, that the long drawn-out period of excessive car shortage will end; and with demand and orders sufficient to cover a full year's work at the mines, they are making complete plans for the year. At this time the outlook for the next six months at least is quite satisfactory.

A quite limited number of contracts for the ensuing coal year have been so far accepted, some of which carry with them the recent wage increase. The disposition to reject such offers is not due so much to a desire to receive a better figure, as it is due to the desire on the part of the operators to tie up permanently with those industries only which will insure them full running time.

The export demand is having a distinct bearing upon the prices offered in this field, as large exporters have found themselves short of sufficient tonnage to complete cargoes and are forced to offer a premium on the necessary spot shipments.

The practice of preferential supply of equipment to railroad fuel-contract mines continues intermittently, and it is understood that the railroads have appealed to the Interstate Commerce Commission for the privilege to continue this practice, pending satisfactory arrangements being made to assure them an adequate supply of fuel.

Benton, Ill.

Diamond Drill Proves Coal in Hamilton County—Old Ben Activities—Ambitious Plans of Southern Gem Corporation

In the March 4, 1920, issue of *Coal Age*, an account was published in the "News" department under "Benton," in which was noted the proposed proving of a large territory in Hamilton County. Some of the results of this examination are now made available in the following report:

One of the test holes has just been completed on the large acreage recently optioned in Hamilton County, just east of here, and the drillers have begun sinking another hole on a different portion of the property. It is said the showing of the first hole was not as satisfactory as was expected, as only a 5-ft. seam was found. The quality of the coal has not been fully determined, although the sample was said to show a low sulphur content. At least two more holes will be put down, and should the showing prove satisfactory, the first mine in this county will be sunk.

There is great activity in southern Illinois at present, not only in connection with new properties, but further development and combination of going mines. This is evidenced by the following account of improvements contemplated by the Old Ben Corporation:

"The Benton Commercial Club has requested the Illinois Central R.R. to put on a miners' train to run from Benton to Buckner, to accommodate miners who work at Buckner and live in Benton. This was done at the request of the Old Ben Coal Corporation, which owns the Buckner mine.

The Old Ben company also notified the club that it would gladly entertain any housing plan which the club might foster, for the purpose of securing more housing facilities for miners wishing to come to work in the mines. The club has housing plans now under consideration, in an effort to secure sufficient men to properly operate the mines.

Furthermore the Old Ben Coal Corporation, which operates eight mines in Franklin County, with a daily capacity of from forty to fifty thousand tons, is considering a storage yard of large capacity, in which to store coal during the summer months, when orders are scarce. Full details have not been made public, nor has the location been disclosed, but it is supposed it will be located convenient to the large coal consuming centers in the northern part of the state

Southern Gem Buys Railroad

When coal development is contemplated, one of the first considerations is an adequate outlet for the mines. This problem apparently has been solved in the purchase of the Wabash, Chester & Western R.R., by the Southern Gem Coal Corporation, which operates mines in Franklin County, and has large coal holdings in Jefferson County. This company had in mind not only the added advantage of having this line already in operation running through its properties, but also an outlet for its product to a water route.

This road runs to Chester, which is on the Mississippi River, and the company expects to be able to secure a more extensive field thereby for its output, by being able to ship by water. The Wabash, Chester & Western also crosses ten other roads and branch roads, and the company contemplates erecting rescreening plants at junctions, thus securing a greater car supply.

Southern Gem people can carry the coal to these plants in their own cars, and by this means they expect to maintain continuous operation, as a rescreening plant is entitled to the same car supply on its daily capacity as the mine where the coal is hoisted.

PENNSYLVANIA

Anthracite

Scranton—On Saturday night, March 27, the official and employees of the Pennsylvania Coal Co. and the Hillside Coal & Iron Co. held their second annual banquet at the hotel Casey. About 500 men were present. Joseph P. Jennings, general superintendent, acted as toast master.

Pottsville—The mine fire in the Wadesville colliery of the Philadelphia & Reading Coal & Iron Co., which started last January, has been successfully extinguished and operations in that part of the mine affected will probably be resumed shortly.

Lansford—Owing to the tremendous amount of work that has been placed upon the nurses attached to the main medical office of the Lehigh Coal & Navigation Co., at this place, the company has been compelled to employ another nurse therefore increasing its staff of nurses at this office to four. The new nurse is Mary Mulhearn.

Hazleton—Owing to breakage of machinery in the breaker, the Hazleton Shaft colliery of the Lehigh Valley Coal Co. has been forced to shut down temporarily.

It is reported that the Sandy Run colliery of M. S. Kemmerer & Co. will probably resume operation within the next two weeks.

Harrisburg—Members of the City Council recently approved the suggestion that this city should get some material return from the local river coal industry. The form the ordinance should take has not been determined, but it may include a tax on the coal recovered or a wharf rental; some 170,000 tons are produced annually. One of the city commissioners stated that the proposition should receive attention.

Wilkes-Barre—The output of coal in the whole anthracite field will be greatly restricted for the seven days ending April 7, due to the number of holidays. Thursday, being April 1, the miners will lay off due to it being the anniversary of the Eight-Hour Day; Friday, April 2, being Good Friday, is a church holiday, and Saturday the men will have to rest due to their hard work in celebrating the previous two days. Monday also being a church holiday, there will be no work. So no material output of coal can be looked for before Tuesday April 6, and probably not before Wednesday will the full output be reached again.

Carbondale—The Birkett Hill Coal Co. is ceasing operations in the mine-fire zone, where coal was being removed in the hope of checking further spread of the fire under the residential section. Some of the property owners thereabouts have sent in a plea to council to take action and compel the company to continue its work or fill the excavations made. For nearly a month there has been no work done, and the trench which was dug in the center of the street remains open. This trench is the entire width of the street and runs as deep as 30 ft. Cave-ins have occurred in the trench and are responsible for the suspension of work, according to G. W. Giles, manager of the coal company. Until the frost is out of the ground and the danger of the sides caving is passed there will be nothing done, he says. The Langan Construction Co., whose machinery is being used in the excavating, is preparing to remove its shovels and other machinery from the ground, and this leads the property owners and residents in that section to believe that there will be nothing further done. The permit to open the streets and do surface mining was granted by council, and it is expected that it will take action at its next meeting.

Bituminous

Charleroi—Another block of over 600 acres of coal lands, located in Independence and Hopewell townships, in the western part of Washington County, was transferred recently to Avella coal operators. The prices paid for the coal are $150 to $175 per acre.

Waynesburg—More than 1,110 acres of coal land in Whiteley, Perry, Cumberland, Morris and Green townships, Green County, were conveyed to the Greene Improvement Co., of Pittsburgh, recently. Prices ranged from $250 to $500 an acre. Most of the land sold for $500 an acre, is near the Monongahela River.

Waynesburg—Deals were closed recently for the coal underlying two Greene County farms. Elizabeth J. Stephens, of Waynesburg, conveyed to John D. C. Miller, of Pittsburgh the coal underlying a tract of 192 acres in Whitely Township. The purchase price was $200 per acre. Lewis L. Haney, of Monongahela Township, conveyed the coal underlying his farm of 88 acres in Monongahela Township to George B. Vance. The price in this deal was $100 per acre.

Albion—The mine of the Albion Coal Mine Co., located north of this city, was reopened recently after a shutdown since Nov. 1, when the mine filled with water after the men walked out on the nation-wide strike. New pumps and boilers have been added and the mine enlarged so that 150 tons will be turned out daily. The force of miners will be increased to 75.

Tarentum—The Pittsburgh Coal Exchange recently held a special meeting at this place, in Allegheny County, at which Captain W. B. Rodgers, presided. Captain J. Frank Tilley notified the members that a number of improvements are being contemplated on the rivers in the Pittsburgh district, among them the building of a new boat yard by the Eichlesy company at Hays station, also ice breakers, coal tipple and abutments for the Diamond Coal & Coke Co., at Barking station. Plans for these improvements were approved.

Uniontown—One of the most important coal deals in the southern Connellsville field in many months was completed recently when the Southern Connellsville Coke Co. purchased 100 acres of coal from Altha Moser, of Uniontown (the trustees in bankruptcy of J. V. Thompson), the coal lying near Cheat Haven. The purchasing company will pay $100,000, or $1,000 an acre. Charles Detwiler, president of the purchasing company, negotiated the deal, and it is probable that this means further development in that section of Fayette County.

Waynesburg—The sale of 1,170 acres of coal land in Cumberland Township for $700 an acre, a total of $819,000, became known here recently when the deed consummating the deal was placed on record in the Greene County court house. The coal was sold by the Prospect Coal & Coke Co. of Uniontown. William A. Stone, A. Plumer Austin, Theodore D. Bliss, Richard W Austin and the executors of the estate of John Gilmore. The purchaser was the Buckeye Coal Co. The Buckeye company already owned a large acreage in Cumberland Township and is operating at Nemicolon.

Pittsburgh—The Tri-State Coal Stripping Association, W. J. Sampson, of Youngstown, Ohio, president, representing 25 coal companies in western Pennsylvania and eastern Ohio, with an annual production of about 5,000,000 tons, held a special meeting here reecntly in the William Penn Hotel. Reports showed production during the year ending April 1, has been greatly hampered by shortage of cars, but that production was fair. The companies have orders for coal booked that will keep plants running full during the summer and fall. Prices were discussed, but no definite schedule was adopted, it being considered advisable to let the market values of coal regulate the prices. It was stated that the supply of coal cars is becoming more plentiful and that by May 1, it was believed, the supply would be almost normal.

Benezett—This old town in the Bennett's Valley of Elk County is about to take on new life as coal operations of some importance will be opened here during the coming summer. Parties from Ridgway, Brockwayville and Reynoldsville are making plans for the opening of a large mine around the Winslow estate one mile above Benezett on Trout Run. Plans are now perfected for a tipple and for an extension of the Buffalo & Susquehanna R R. to that point. This operation will eventually be one of the chief industries of Elk County, it is said, as the company has purchased or leased the 6,000 acres included in the Winslow estate. The company has already contracted for the removal of 50 houses from Pardus, Jefferson County, to Benezett and for their construction at the last named place. The Ridgway parties connected with this enterprise are R. A. Cartwright and H. S. Thayer.

Uniontown—It is reported in local coal and coke circles that an appropriation will be made soon for the erection and completion of a huge underground carrier system, whereby coal mined from Colonial mines Nos. 3 and 4, of the H. C. Frick Coke Co., will be conveyed to the Monongahela River, where it will be taken by barges to the byproduct ovens of the Carnegie Steel Co., at Clairton, Pa. It is proposed to carry the coal on a series of great 1,000-ft. belt lines, through the old Alice mines, formerly owned by the Pittsburgh Coal Co., for a distance of about 4½ miles. G. W. Mathews, of Kentucky, who at present is temporarily assigned as assistant superintendent at the Bridgeport mines of the Frick interests, will superintendent the operations and the erection of the carrier system through the Alice mines. The underground carrier system through the old mines is one of the most pretentious plans undertaken in this section of the coke region, it is declared, and will entail the expenditure of a considerable sum of money.

WEST VIRGINIA

Grafton — Fire totally destroyed the power house, machinery and tipple of the Sterling Coal Co. at Cecil, near this place. The fire originated in the power house. The loss is placed at $50,000. A large number of men will be kept out of employment until the buildings can be replaced.

Huntington—At a meeting of the Logan Coal Operators' Association, held in this city on March 31, John A. Kelly, one of the operators of the Logan field, was elected secretary of the association, succeeding W. P. Ellis, who resigned a month or more ago. Mr. Kelly is one of the executives of the Main Island Creek Coal Co., his headquarters being at Omar, W. Va. J. W. Colley was chosen at the same meeting as assistant secretary of the association, being in charge of the asociation offices recently moved to Huntington.

Wheeling—The Wheeling District Motor Coal Association has been organized by operators and owners of mines in Wheeling and vicinity, who deliver their coal by motor from the mines to nearby consumers. There are about 35 motor coal mines in the Wheeling district, the daily output of such mines being about 3,000 tons, in the production of which about 800 men are employed. These mines represent an investment of about $1,000,000. Officers of the new association are: J. F. Gebbart, president; R. J. Cotts, vice president; C. H. Ebberts, treasurer; George A. Blackford, secretary. The above officers and James Ralston, M. E. Cartwright, R. W. Hall and Frank Hallstone constitute the board of directors.

Macdonald—All miners in the vicinity of Fayette County are invited to attend the meetings of the Fayette County Mining Institute, and they are especially recommended by R. M. Lambie, Chief of the State Department of Mines, to those who contemplate taking the state examinations, inasmuch as subjects of benefit are brought up at these occasions. About 75 were present at the meeting held recently in the school building at Macdonald.

Those taking part in the discussions were: Edward Graff, R. M. Lambie, Robert Lilly, Thomas Cochran, John Mallabone, George Lohman, Ben Wakefield and others. Owen Fitzpatrick read a paper upon the subject of "Pure Air Is Essential to Good Health," and William Ward, a paper upon the subject "Dangerous Practices in Mining."

Morgantown—An important meeting of the Northern West Virginia Coal Operators' Association was held in this city on April 1 and largely attended by members from various sections of the state, the meeting having been called largely to stimulate interest in the activities of the association. The principal address was made by J. D. A. Morrow, executive vice-president of the National Coal Association. Other speakers were President Brooks Fleming of the association, executive vice-president G. T. Bell and F. C. H. Jenkins, former president of the association. Mr. Morrow in his address told of the work of the National Coal Association, at Washington, emphasizing the results accomplished which would have been impossible had coal men not had a strong organization to speak through.

Charleston—Representatives of the West Virginia Department of Mines having made a thorough examination of the No. 1 mine of the Buffalo Thacker Coal Co. at Ottawa in the Coal River field, which caught fire on Jan. 26, and which has been out of commission since then and have found the fire extinguished, the department about the first of April gave its approval to the reopening of the mine which is now in commission once again. Inspectors Mason and Lilly and H. M. Black, Director of Mine Rescue Stations, represented the department in making an inspection. The fire at the No. 1 mine was extinguished after every other means had been resorted to by sealing four entries to the mine, shutting off all oxygen and leaving the mine sealed until the inspection was made during the week ended April 3.

MARYLAND

Cumberland—The discovery of a virgin coal field, a southward continuation of the Georges Creek and Elk Garden fields of Maryland and West Virginia, has just been announced by the U. S. Geological Survey. It is known as the Abram Creek-Stoney River field and it is estimated that the recoverable coal of the field amounts to 422,000,000 tons.

It contains low-volatile, semi-bituminous coal and is nearer tidewater than any other Appalachian field except the Georges Creek and Upper Potomac. The coal is at present entirely undeveloped and the area is without railroads, but it would require only a few miles of branch roads to reach lines running to Baltimore or Newport News. Interest has been aroused in this area because of the advancing exhaustion of neighboring districts.

ALABAMA

Birmingham—The byproduct coke ovens of the Birmingham Coke & By-Products Corporation at Boyles, near here, are now in operation. The first coke made at this plant was ready for delivery the last of March. The byproduct plant consists of 50 Koppers ovens, with a daily capacity of 700 tons of coke. The construction of these ovens began in the fall of 1918. In addition to the coke large quantities of ammonia and byproduct gas will be produced, the former sold in the market and the latter utilized in the operation of the plant and in generating power for other industries in the vicinity. The Dixiana mines at Bradford and the Majestic mines coal is being shipped in steadily to the plant and it is understood that some of the Woodward coal will also be used at the plant. The byproduct coke-oven plant at Boyles is the largest of the independent development of the district in years. It is a plant erected without any direct connection with another industry. Industrial circles are informed that the Woodward Iron Co., in taking coke from this plant, will shut down some of its bee-hive ovens and also take up repairing of a portion of its byproduct plant.

ILLINOIS

Edwardsville—The surface works of the Henrietta coal mine at Edwardsville, owned by the I. X. L. Coal Co., of St. Louis, and operated under lease of the Beck-White Coal Co., also of St. Louis, collapsed a few days ago after having been weakened by a wind storm. The mine had been idle for some time. The tower carried down with it the shakers and loading chutes. The shaker engine plunged to the bottom of the shaft. The damage is placed at between $20,000 and $30,000.

Belleville—Fire of undetermined origin caused approximately $30,000 damage at the Senior mine just outside of this place recently. The fire was discovered in the engine room near the mine shaft, by the night watchman. The Belleville fire department responded but lack of water prevented its giving much assistance; the flames had extended to the boiler room and the tipple over the shaft. The three structures were completely destroyed, but the shaft escaped much injury. Some 150 miners were thrown out of work. L. Senior, of Belleville, owner of the mine, stated that the property had a daily capacity of 700 tons, and that efforts would be made to rebuild at once.

Duquoin—Recent reports from the Kathleen mine, at Dowell, five miles south of here, indicate that a marked improvement has been shown in tonnage during the last two months. The local management of the plant is held by Superintendent Robert Medill, who recently succeeded Edward Bottomley. The development is shown by the daily tonnage which has jumped from 1,100 to around 1,800 tons. The mine will operate steady all the coming summer as the owners, the Union Colliery Co., have a ready use for the coal which will be used in St. Louis to furnish power for their numerous power plants.

The new washhouse and office building at the Kanawha Fuel Co.'s mine at this city was recently completely destroyed by fire. The fire which is said to have originated in the lockers of the wash house became uncontrollable before anything could be done toward saving the contents of the office. Besides the loss in the office, practically every miner working at the mine lost a complete set of clothing.

Duquoin—One of the largest and most disastrous fires in the mining history of southern Illinois occurred on March 30, when the tipple of the Jackson Coal Co., at Hallidayboro, six miles south of here, was burned to the ground. The fire was discovered about 12:45 a.m. and burned until long after daylight. The cause of the fire has not been determined. The mine has been in operation for over 25 years and was one of the oldest in this part of the state. The tipple, which was of wood, a large coal washer and rescreening plant, coal bins, which were used to coal railroad engines, the blacksmith and machine shops, together with other buildings around the mine were completely destroyed. The only remaining structures around the plant are the engine and boiler rooms and the fan house which is about one half mile away from the rest of the main surface plant. Plans were at once announced, by the officials of the company, for the erection of a new and modern steel tipple to replace the one which was destroyed and the inauguration of other improvements in and around the mine. The burning of this mine destroys what has recently become an old land mark throughout southern Illinois; at one time it ranked high among the big producers of coal. At the present time its capacity is in the neighborhood of 2,000 tons daily. The main offices of the company are at Chicago. The estimated loss of the fire is over $150,000.

SOUTH DAKOTA

Aberdeen—Dr. S. M. Darling, of Washington, D. C., fuel engineer of the United States Bureau of Mines, was a business visitor in this city, conferring with the officers of a coal company, whose headquarters are in Aberdeen. He is a Government representative in North and South Dakota relative to the development of the lignite fields of the sister states by the Government. Dr. Darling stated in an interview: "The Bureau of Mines proposes to co-operate with one of the lignite coal mining companies of the West in extensive work in a large, specially devised carbonizing and briquetting plant, to clearly demonstrate to private capital the commercial practicability of carbonizing and briquetting lignite coal, and to make clear the handsome profits that can be made on capital invested in such an industry. It is planned to build at one of the larger coal mining centers, a carbonizing and briquetting plant to cost $150,000 to carry on the demonstrations determined upon. The plan to be followed will be to briquette and carbonize lignite coal, each briquette to have a fuel value equal to the best anthracite coal and to be marketed for all purposes that antracite coal is now used."

Personals

W. S. Walker, of St. Louis, has succeeded George A. Miller, former sales manager of the Peabody Coal Co., St. Louis, Mo.

Jacob M. Holt, formerly superintendent of the Kehley's Run colliery of the Madeira Hill Co. has been assigned to other duties on account of ill health.

T. J. Lewis has been appointed mining engineer of the anthracite operations of the Madeira Hill Co. at Frackville, Pa. His appointment became effective April 1.

George Lovell has been appointed superintendent at the Kehley's Run colliery of the Madeira Hill Co. The appointment took effect on April 1.

Harry Smith, superintendent of the Archibald colliery of the Delaware, Lackawanna & Western company, is transferred to the Bliss colliery of this company, near Scranton, Pa.

Starr J. Murphy has been elected a director of the Consolidation Coal Co. to succeed the late Jere H. Wheelwright, and **A. W. Calloway** was elected a director to succeed Carl R. Gray, resigned.

Charles D. Barry, of Fairmont, has been named as chief clerk of the West Virginia Division of the Consolidation Coal Co, succeeding Chester C. Shinn, promoted. Mr. Barry was the division shipping clerk.

E. J. Buegler, formerly consulting engineer of the Westinghouse, Church, Kerr Co., has been elected a vice president of The Foundation Co. and will be in charge of the engineering department of the company.

Roscoe Crozier, of Bluefield, has been appointed field agent for the Lake & Export Corporation, of Huntington, and will be in charge of the Bluefield office of that company. He has been connected with the Pocahontas Fuel Co.

A. E. Brachny, assistant purchasing agent for the Lehigh Valley Coal Co., has resigned. He is going into business for himself in New York. His fellow employees presented him with a handsome travelling bag.

Newton Bayless, formerly of Harrisburg, Ill., has accepted the position as mine manager for the large Kathleen mine at Dowell, Ill. The vacancy was recently made by the resignation of William Stevenson, who has departed for England.

Howard W. Perrin, formerly manager of anthracite sales of M. A. Hanna & Co., Commercial Trust Building, Philadelphia, Pa., has been elected vice president of the Susquehanna Collieries Co., controlled by the Hanna interests.

E. T. Miller, district superintendent of the Greenwood division of the Lehigh Coal & Navigation Co., in Schuylkill County, Pa., resigned on March 15 to take the position of chief engineer of the Woodward Coal & Iron Co. at Woodward, Ala.

J. K. Voshell, of Baltimore, Md., has been elected a member of the board of directors of the Davis Coal & Coke Co., Baltimore, at the annual meeting held on March 21. Mr. Voshell succeeds E. R. Stewart, recently resigned.

Joseph Koerner, formerly with the Illinois Sixth Vein Coal Co., has accepted the position as payroll clerk for the Equitable Coal & Coke Co., of Duquoin, Ill., operating two mines, one at Duquoin and the other at Johnston City.

Joseph H. O'Brien, formerly vice president and chief engineer of the Central Construction Corporation and before that for 15 years with the Westinghouse, Church, Kerr Co., has been appointed chief engineer of The Foundation Co.

E. J. Jones, formerly assistant to Mr. Nold the mining superintendent of the Lehigh Coal & Navigation Co., has been appointed district superintendent of the Greenwood district, in the Southern anthracite region of Pennsylvania. C. D. Rubert, formerly superintendent of strippings of the Lehigh Coal & Navigation Co., has been appointed district superintendent of the Rahn district, in Schuylkill County.

F. B. Reiman, who has a coal and coke sales office in Pittsburgh, Pa., was the former representative of the U. S. Fuel Administration in the Pittsburgh section. He was also at one time the secretary of the Northwestern Pennsylvania Coal Operators' Association.

David Lloyd, who has been superintendent of the Auchincloss colliery of the Delaware, Lackawanna & Western company, has been transferred to the Scranton district and will be in charge of the Archibald, Hyde Park and other operations in the Northern anthracite field of Pennsylvania.

Archibald Hamilton, transit man in the St. Clair division of the Philadelphia & Reading Coal & Iron Co., at Pottsville, Pa., has resigned to take a position as traveling salesman with the Williamsport Leather Goods Co., Williamsport, Pa., manufacturers of leather belting.

Wayne Carruthers, superintendent of the Bliss colliery of the Delaware, Lackawanna and Western company, has been transferred to the same position in charge of the Auchincloss, Loomis anod Avondale anthracite collieries in the Wyoming Valley of Pennsylvania.

Chester C. Shinn, of Fairmont, has been appointed chief clerk to Vice President Brooks Fleming, Jr., of the Consolidation Coal Co. Mr. Shinn was formerly chief clerk of the West Virginia division of the Consolidation company. Mr. Shinn has been in the service of the company for 22 years.

John Blizard, formerly of the mines branch of the Canadian Department of Mines, has recently been appointed as a fuel engineer at the Pittsburgh Station of the United States Bureau of Mines. Mr. Blizard has done a great amount of work on fuel testing, having published recently an elaborate report of the results of steaming tests conducted at the fuel testing station, Ottawa. This is report No 496, of the Canadian Department of Mines. He has quite recently assumed his duties in the new position.

Albert L. Gately, for several years master mechanic at the Klein mine of the Republic Coal Co., near Roundup, Mont., has been appointed superintendent of the property to succeed **William Redshaw.** The announcement was made by **James H. Needham,** general manager. Mr. Gately has spent his entire life in the vicinity of and associated with the coal industry. Mr. Redshaw has left for Rock Springs, Wyo., where he will take charge of coal properties for the Megeath interests.

John D. Rockefeller, Jr., retired as a member of the board of directors of the Colorado Fuel & Iron Co. when the annual stockholders' meeting chose John C. Mitchell, a Denver banker, to succeed him on the board. Mr. Rockefeller had served on the board for 17 years. In the letter in which Mr. Rockefeller requested that he be not elected he asked it in pursuance of his policy of retiring from the directorates of all concerns with which the Rockefeller interests are connected The majority control of the stock of the corporation is retained by the Rockefeller interests.

Obituary

Colonel William W. Coe, a prominent railroad official and coal operator, died at his home in Charleston, W. Va., recently aged 73 years. For a number of years he was chief engineer at the Shenandoah Valley R.R. and later became general manager of the Pocahontas Coal & Coke Co.

Coming Meetings

The Rocky Mountain Coal Mining Institute will hold its annual meeting in Denver, Col., in conjunction with the National First-Aid Meet, on August 20 and 21. Secretary, F. W. Whiteside, Denver, Col.

National Coal Association will hold its annual meeting May 25, 26 and 27 at the Traymore Hotel, Atlantic City, N. J. Secretary, W. B. Reed, Commercial Bank Building, Washington, D. C.

The American Association of Engineers will hold its annual convention at the Planters Hotel, St. Louis, Mo., May 10 and 11. C. E. Drayer, secretary, Chicago, Ill.

National Foreign Trade Convention to be held in San Francisco, Cal., May 12, 13, 14 and 15.

National Conference of Business Paper Editors will hold its next meeting June 4 at the Congress Hotel, Chicago, Ill. Secretary, R. Dawson Hall, 36th St. and 10th Ave., New York City.

M. O. I. Coal Association will hold its annual convention June 16, 17 and 18 at Cedar Point, Ohio. Secretary, B. F. Nigh, Columbus, Ohio.

National Retail Coal Merchants' Association will hold its annual meeting June 10, 11 and 12 at Detroit, Mich. Secretary-manager, Ellery Gordon, Philadelphia, Pa.

Kentucky Mining Institute will hold its annual meeting June 4 and 5 at Lexington, Ky. Secretary, C. W. Strickland, Huntington, W. Va.

American Society of Mechanical Engineers will hold its spring meeting May 24, 25, 26 and 27 at St. Louis, Mo. Secretary, Calvin W. Rice, 29 West 39th St., New York City.

Chamber of Commerce of the United States of America will hold its eighth annual meeting April 26, 27, 28 and 29 at Atlantic City, N. J. Assistant Secretary, D. A. Skinner, Washington, D. C.

West Virginia Coal Mining Institute will hold its annual meeting June 7 and 8, at White Sulphur Springs, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

American Wholesale Coal Association will hold its annual meeting June 1 and 2 at Pittsburgh, Pa. Secretary, G. H. Merryweather, Washington, D. C.

Retail Coal Dealers' Association will hold its annual meeting April 19 and 20 at McAlester, Okla. Secretary, C. R. Goldman, Dallas, Tex.

Southwestern Interstate Coal Operators' Association will hold its annual meeting June 8 at Kansas City, Mo. Secretary, W. L. A. Johnson, Kansas City, Mo.

Mine Inspectors' Institute of America. Annual meeting July 13, 14 and 15 at Cleveland, Ohio. Secretary, J. W. Paul, Pittsburgh, Pa.

Coal and Coke Patents

Byproduct Condenser. Arthur Roberts, Evanston, Ill., 1,333,631. March 16, 1920. Filed April 17, 1915; serial No. 22,146. Renewed Jan. 7, 1918; serial No. 210,772.

Rail Bond. Edward M. Deems, Forest Hills, N. Y., 1,333,904. March 16, 1920. Filed Jan. 8, 1919; serial No. 270,149.

Mine-Shaft Safety Device. George M. Johnson, McDonald, Pa., 1,333,921. March 16, 1920. Filed July 23, 1918; serial No. 246,367.

Safety Device for Mine Cages. Slave Peskulich, Butte, Mont., 1,334,116. March 16, 1920. Filed Aug. 7, 1919; serial No. 315,943.

Treating of Lignite. Walter Runge, Orange, N. J., assignor to International Coal Products Corporation, Richmond, Va., 1,334,170. March 16, 1920. Filed April 30, 1919; serial No. 293,829.

Method of Manufacturing Briquets. Charles Howard Smith, Short Hills, N. J., assignor to International Coal Products Corporation, Richmond, Va., 1,334,180. March 16, 1920. Filed Feb. 18, 1918; serial No. 217,758.

Hoisting Apparatus. Henry Kenyon Burch, 1,334,220. March 16, 1920. Filed Nov. 8, 1916; serial No. 130,242.

Apparatus for Mining Purposes. Edmund C. Morgan, New York, N. Y., 1,333,627. March 16, 1920. Filed April 28, 1913; serial No. 763,962. Renewed Nov. 7, 1919; serial No. 336,470.

Light-Coke Product and Method of Making Same. Hugh Rodman, Edgewood, Pa., assignor to Rodman Chemical Co., East Pittsburgh, Pa., a corporation of Pennsylvania, 1,334,404. March 23, 1920. Filed June 22, 1915. Serial No. 35,592.

Method of Utilizing Fuel. Hugh Rodman, Edgewood, Pa., assignor to Rodman Chemical Co., East Pittsburgh, Pa., a corporation of Pennsylvania, 1,334,405. March 23, 1920. Filed June 22, 1915. Serial No. 35,594.

Centrifugal Pump. Charles V. Kerr, Aurora, Ill., assignor to the American Well Works, Aurora, Ill., a corporation of Illinois, 1,334,461. March 23, 1920. Filed Oct. 29, 1917. Serial No. 198,981.

Peat Drier. William S. Jackson, Toronto, Ont., Canada, 1,334,495. March 23, 1920. Filed May 6, 1918. Serial No. 232,833.

Concentrating Apparatus. Emil Diester, Fort Wayne, Ind., assignor to Diester Machine Co., Fort Wayne, Ind., a corporation of Indiana, 1,334,524. March 23, 1920. Filed April 21, 1917. Serial No. 163,609.

Pipe Joint. William H. Flint, Birmingham, Ala., 1,334,530. March 23, 1920. Filed Aug. 15, 1918. Serial No. 249,993.

Carbide Lamp. Thomas Thompson, Howe, Okla., 1,334,570. March 23, 1920. Filed May 13, 1918. Serial No. 234,154.

Rail Joint. John C. Elkins, Santa Rosa, Cal., 1,334,602. March 23, 1920. Filed Sept. 20, 1919. Serial No. 325,240.

Air-Lift Pump. Ralph H. Tucker, Los Angeles, Cal., assignor of one-third to Edgar S. Cameron and one-third to Charles M. Tucker, Los Angeles, Cal., 1,334,638. March 23, 1920. Filed Feb. 24, 1919. Serial No. 278,804.

Industrial News

Moundsville, W. Va.—Twelve hundred acres of coal land in Green County, Pa., was purchased 13 years ago at $300 per acre. This property was sold recently for $1,000,000, or an average of $833⅓ an acre.

Laurel Creek, W. Va.—The Pen-Mar Realty Co. has acquired a total of about 175 acres of coal lands in the vicinity of Laurel Creek, and is arranging plans for the immediate development of the property.

Habersham, Tenn.—T. P. Witherspoon, of Knoxville, and G. G. Crowley, of Jellico, have completed negotiations for the purchase of mining properties at Habersham, and are arranging plans to increase the present capacity to a total of 300 tons daily.

Blackey, Ky.—The Woodburn Coal Co. is understood to be having plans prepared for the immediate construction of a new tipple at its plant for increased operations. Arrangements are also being made, it is understood, for the erection of about 30 dwellings for miners' service.

Henryetta, Okla.—The Creek Coal & Mining Co., of this place, is sinking a new shaft and installing equipment, at what is to be known as No. 2 Creek, between mine No. 1 and Victoria mine. An entry is being driven to meet mine No. 1 which has only about 80 ft. to go.

Winchester, Ky.—R. D. Baker, J. M. McLemore, and associates have acquired a large local coal and timber tract and will arrange for immediate development. Complete equipment for all features of operation will be installed.

Pittsburgh, Pa.—The Iron Trade Products Co., of this place, has been appointed exclusive sales agent for the Connellsville-Fairmont Coal Co.'s mines at Worthington, W. Va. The property is located on the Baltimore & Ohio R.R. and produces a steam coal.

Welch, W. Va.—Coal will be mined by the Vauclare Coal Co., organized about the first of April by Welch business men, with a capitalization of $25,000. Instrumental in capitalizing the company were: W. W. Hughes, I. J. Rhoades, L. A. Osborn and T. F. Henritze, all of Welch; R. R. Fairfax, of Roanoke, Va.

Logan, W. Va.—The general headquarters of the Lundale Coal Co. and of the Amherst Fuel Co. are to be moved from Huntington, W. Va., to Lundale, W. Va. George M. Jones is the president of each of the above companies. The Amherst Coal Co., of which H. R. Jones is president, is to move its general office from Huntington to Amherstdale.

Morgantown, W. Va.—Plans have been formulated by the Dellslow Coal Co., of this city, to mine coal in the Morgan district of Monongalia County, the capital stock of the new company being $50,000. Leading figures in organizing the company were: Thomas J. Watring, J. M. Wood, F. E. Sapp, Nick Patt, Pietro Fantucci, all of Morgantown, W. Va.

Philadelphia, Pa.—Coal operators, shippers and carriers, at a meeting held here recently, appointed a committee of 15 to draw up rules and regulations, with a view of continuing the soft coal pools at the various Atlantic ports north of Baltimore after April 30. The present arrangement for the transshipments of the fuel expire by proclamation of President Wilson.

Huntington, W. Va.—The Lake & Export Coal Corporation, of this city, has just consummated a contract for the delivery of 960,000 tons of coal from the West Virginia fields to one of the large shipping concerns in the United States, the coal to be delivered during the present coal year, presumably at the rate of 80,000 tons of coal a month.

St. Clairsville, O.—The Goodyear Tire & Rubber Co. has completed negotiations for the purchase of the coal property of the Somers Coal Co., located in Harrison and Belmont counties, for a consideration of about $385,587.96. It is understood that the Goodyear company is planning for the opening of a new mine and the construction of a mining town in the vicinity of New Athens.

Huntington, W. Va.—Arrangements have been completed by the W. E. Deegans Coal Co., of this city, for the delivery to European markets within the next 12 months of 1,000,000 tons of coal. While heretofore the company has sold coal for the export trade, it has not undertaken delivery of such coal. In the present instance the company has chartered vessels and will make its own deliveries.

Mt. Vernon, Ill.—It is reported here that the Wabash, Chester & Western R.R. has been sold to Henry Dimond, a Franklin County coal operator. Mr. Dimond is said to have had an option on the road for $500,000 and recently made a trip of inspection over it. The road runs from Mt. Vernon to Chester, 66 miles, and is an outlet for a considerabe coal territory. The Dimond interests have recently bought several thousand acres of coal lands in the territory served by the road.

Sheridan, Wyo.—The Sheridan-Wyoming Coal Co., Inc., a subsidiary of the United States Distributing Corporation, has just completed a lease of (with an option to buy) all of the coal lands near this place, owned by the Kendrick-Irvine Corporation. United States Senator John B. Kendrick is president of the Kendrick-Irvine Corporation. The lands involved embrace approximately 1,420 acres bearing coal deposits operated through the Acme mine of the Sheridan-Wyoming Coal Co., Inc.

Wheeling, W. Va.—A coal deal involving considerably more than a million dollars was consummated here recently, when the Elm Grove Mining Co., in Ohio County, W. Va., became the owner of the Glendale mine of the Hitchman Coal & Coke Co., of Benwood, near Wheeling, and the Security mine, at St. Clairsville, of the Security Coal Co. The latter mine was owned by David Thomas and Judge John C. Nichols, both of St. Clairsville. The company making the purchase is said to be associated with the Valley Camp Coal Company, of Cleveland, Ohio.

Williamson, W. Va.—It is understood that the Norfolk & Western R. R. owns about 5,000 acres of coal land in addition to going mines, and will in the near future undertake the development of the acreage alluded to in order to increase its fuel supply. With the full development of this acreage owned by the railroad, through the operation of about ten mines, it will be possible for the Norfolk & Western to increase its fuel output about 1,500,000 tons per year. Mines now operated by this railroad are located at Mohawk, in the McDowell County; and Vulcan and Chattaroy, in Mingo County.

McAlester, Okla.—One of the results of the demands of coal miners for increased wages was the announcement by the Missouri, Kansas & Texas R.R. that practically all of its locomotives will be changed from coal to oil burners. In this change the Oklahoma mining industry, and also that of Texas, will lose a standing order of a tonnage that amounts to millions of dollars a year. This is a blow to the coal industry of Oklahoma, operators here say, as the railroad's order for coal was for every day in the year. Many mines, not yet recovered from the effects of the recent strike, will become stagnant, it is said.

Thacker, W. Va.—The Buffalo-Thacker Coal Co. is having plans prepared for extensive increased operations to develop an ultimate capacity of approximately 600,000 tons per year. The company holds a total of 1005 acres of coal properties as well as leases on 2580 acres in the Kanawha field, with six complete mining operations, including electric power plants for works service, miners' houses, townsites, and so on, located on the Norfolk & Western and Chesapeake & Ohio roads. It is proposed to issue bonds for $550,000, the proceeds to be used for the proposed expansion. L. R. Reese is president.

Beachley, Pa.—The Beachley Coal Co., operating four mines at this place in Somerset County, has contracted for the building of 20 new, fireproof houses on the company's property. The work on these houses will start at once so that they will be ready for occupancy about the middle of summer or perhaps earlier. The dwellings will be of a size sufficient to comfortably house the miners. The company has recently secured the services of John Auld (formerly superintendent of the Thermal Smokeless Coal Co.), as superintendent of the Beachley mines and he will assist in pushing the work of the construction of the houses so that they may soon be ready for occupancy.

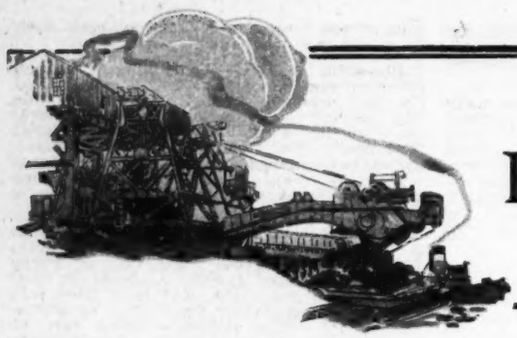
Bluefield, W. Va.—In opening a branch office in this city, the West Virginia Coal Co. has selected Arch S. Booker of this city as its local manager. The general office of the West Virginia company is at Richmond, Va., although the company maintains a large branch office at Huntington, W. Va. Mr. Booker was at one time associated with the firm of Castner & Curran.

Huntington, W. Va.—The West Virginia & Kentucky Coal Co., of Letcher County, Ky., the Acup Creek Coal Co., of Perry County, Ky., and the R. J. Jones & Sons Coal Co., of Jonesville, Ky., have been sold to the Consolidated Fuel Co., of Pittsburgh, Pa. The purchase price for the properties, it is understood, was $525,000, the deal having been consummated on April 1 by H. P. Jones, of Huntington. The purchasing company is headed by Isaac J. Jenkins of Pittsburgh. The Consolidated operations will be under the direction of Charles A. Miller, of Pittsburgh, as general manager. In addition to the above, James R. Jones is to be assistant general manager; Harry P. Jones, Jr., auditor, and William A. Phillips, manager of stores. The total acreage owned by the companies which were sold, aggregated 5,200 acres, all of which are now under development.

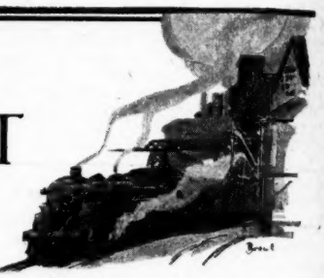
Baltimore, Md.—Action has been taken by the board of directors of the Pittsburgh & West Virginia Ry. (the stocks of which are largely held in Baltimore), looking to the separation of the West Side Belt R.R. from the Pittsburgh Terminal R.R. & Coal Co., which controls and operates bituminous properties. This merger of the West Side Belt R.R. with the Pittsburgh & West Virginia Ry. Co. will put all the railroad properties and operations under one corporate organization. The question of merging these properties will come before the stockholders at their annual meeting in May. The planned rearrangement of the Pittsburgh & West Virginia properties will put all the railways in one company, which will in turn own the coal properties through ownership of all the capital stock and consolidated mortgage bonds of the coal company. It is understood that the action now taken is preliminary to a further step to separate the railway from the coal properties.

Charleston, W. Va.—With the awarding of a contract for the building of the Greenbrier & Eastern R. R. (10½ miles in length) from Rainelle, along Meadow Creek, penetrating the coal lands of Greenbrier County, an impetus will be given the development of large tracts of coal land. In a number of instances companies have not waited for the construction of the railroad before beginning development work, having already started the driving of entries. The new railroad will open up for development about 10,000 acres of coal land, eight companies having much of that acreage under lease. Eventually the new railroad will be 50 miles in length and will penetrate a coal area containing about 175,000 acres of smokeless coal, much of which contains the Sewell, Fire Creek, Beckley and Pocahontas No. 3 seams. Construction work on the first ten miles of the railroad will be completed by Dec. 1, 1920, and by Jan. 1, 1921, several companies expect to be in a position to begin the shipment of coal.

Great Falls, Mont.—Rapid development of the coal properties it owns in Spring Creek is planned by the Anaconda Copper Mining Co. As soon as the railroad situation will permit of extensions being made, the company will ask the Great Northern Railroad to build a track of some six miles from the road to the Spring Creek Mines. The new operation will be about 4½ miles from the present Tracy mines, but the branch which will reach the Spring Creek property will be a different one from the line which goes to Tracy, Sand Coulee and Stockett. The coal of the new property is said to be substantially the same in quality and the seam is about the same in thickness, as the one which has been so successfully worked by the company at Tracy and Sand Coulee. It is not expected that the mine will be opened to any great extent for several months, as it is thought probable that it will take 18 months to bring the railroad to the proper development to handle the output of the mine. The Spring Creek properties are made up of the acreage secured by purchase several months ago by Dan Tracy, who acted as the agent for the company. They embrace something like 1,400 acres. F. W. C. Whyte is in charge of the coal properties of the company as general manager, and John Gillie is superintendent of mines. The general office is at Butte, Mont.



MARKET DEPARTMENT



Weekly Review

Strike of "Outlaw" Railway Employees Interrupts Coal Industry—Midwest Operators Forced to Shut Down—Tidewater Exchange to Be Continued After May 1 as Voluntary Organization.

BECAUSE of the "outlaw" strike of switchmen and other railway employees, shipments from the mines to tidewater were greatly interfered with, and though output continued to improve the product could not be moved to market.

During the early part of the strike embargoes were ordered by some of the coal-carrying roads in the Mid-west, but now the strike has spread virtually throughout the East. Coal-mine operators in Illinois and Indiana feared the possibility of being forced to shut down because of lack of cars. The shortage of cars became even more acute than in the preceding week, and in southern Illinois some mines have been closed since April 9. On that day 94 mines in Indiana, with a total daily production of close to 100,000 tons, closed, which caused nine furnaces at Gary, Ind., to go out of blast because their fuel supply was cut off.

For other reasons cars were in short supply in other sections of the country. In New England, for instance, some of the roads found themselves lacking motive power. Locomotives which were borrowed from one railroad for use on another had to be returned after the discontinuance of Government control, and these railroads will be unable to procure new locomotives from the manufacturers for some time to come.

Bunkering hampered by the permit system found itself beset with many other difficulties. Not only were shipments from the mines held back by the inadequate service of the railroads but also by reason of the strike of marine engineers and pilots. The ports on the Atlantic Coast are only moderately supplied with fuel.

Threats—direct and implied—from Washington that a campaign is to be waged against fuel-price extortioners is apparently not being heeded by some coal concerns as is evidenced by the fact that the prices of certain coals which under Government control had been selling for $2.95 have reached $8, as was the case with West Virginia splints, a high-grade gas coal.

There is still a considerable difference of opinion in all districts regarding the actual effect of increased costs on prices. In the Pittsburgh district there has been a marked shortage of slack due to the increased call for mine-run for railroad and other steam purposes. This is a temporary condition, however, which will be corrected as soon as normal supplies for steam purposes have been received and Lake shipments of screen coal have begun.

Central Pennsylvania prices have been running from $3.50@$4.75 at the mines, Pool 10 running about $4, Pools 1 and 9, $4.10@$4.50, while the poorer grades have in some instances been contracted for at $3.50.

In the export market a few orders of low sulphur gas coal have been placed for April shipment as high as $7 at the mines, but these are exceptional cases. The average price for April, May and June shipments through 33 and 37, has been $4.70 at the mines with mine-run 20c. less. Very little central Pennsylvania smokeless has been exported, mine prices being $5.35@$5.40.

The continuance of the Tidewater Coal Exchange as an incorporated body after May 1, with the continuance of the present pool numbers and the gradual reclassification of certain mines, in co-operation with the advisory committee of the railroads, will tend to stabilize the market and make possible firm quotations at established rates within the next few weeks.

WEEKLY PRODUCTION

The weekly report on the production of bituminous coal, anthracite, and beehive coke, compiled by the Geological Survey Department of the Interior, April 10, 1920, states that the year 1920 proved no exception to the rule that production falls off during the first week of the new coal year. As far back as the weekly production records extend the transition from the old to the new coal year has been registered by a downward jog in the production curve. The depression this year was less marked than usual, however, and for the first time since January the 1920 production has passed all three of its predecessors.

Preliminary estimates place the output of soft coal during the week ended April 3 at 9,858,000 net tons, a decrease of 11.5 per cent when compared with the preceding week. The cause of the decrease was twofold: The normal break at the beginning of the new coal year was this year reinforced, as in 1917 and 1918 also, by the observance of Good Friday and other holidays.

The total production of bituminous coal during the coal year just ended is estimated at 487,000,000 tons, as compared with 504,100,000 tons in the pre-war year 1916-1917. The decrease was, of course, caused by the great strike of last November. Production since Jan. 1, 1920, however, compares favorably with the record of even the war years. It now amounts to 140,600,000 tons and is 29,400,000 tons ahead of 1919; 900,000 tons ahead of 1918, and within 1,850,000 tons of the record of 1917.

The production of Pennsylvania anthracite during the week ended April 3 fell off sharply. Shipments by the nine principal carriers—in part estimated—were 24,786 cars, indicating a total production of 1,273,000 net tons. This was a decrease, when compared with the preceding week, of 596,000 tons, or 32 per cent. The decline is attributed to the observance of Good Friday and other holidays of the Easter season.

Preliminary estimates place the production of anthracite during the coal year just closed at 89,434,000 net tons. The output in recent years has been as follows (in net tons): Coal year April 1 to March 31—1916-1917, 87,947,000; 1917-1918, 100,372,000; 1918-1919, 92,402,000; 1919-1920, 89,434,000.

Although much smaller than its two immediate predecessors, the output for 1919-20 was thus greater than that for 1916-17.

The production of beehive coke declined slightly during the week ended April 3. The total output is estimated from railroad shipments as 493,000 net tons, a decrease when compared with the preceding week of 8,000 tons, or 1.6 per cent. All districts except West Virginia reported a decrease. Production in the Connellsville region, as reported by the Connellsville *Courier*, declined from 254,552 to 248,005 tons.

The cause of the decrease is believed to be the observance of Good Friday. At many plants the absence of workers was more important in curtailing production than car shortage.

For the third week in succession the current production was greater than that for the corresponding period a year ago, 493,000 tons during the week of April 3, 1920, as compared with 350,000 tons in 1919. The cumulative output since Jan. 1, 1920, is thus rapidly overtaking the lead of last year. It now amounts to 5,987,000 tons, or only 249,000 tons behind the record of the corresponding period in 1919.

Atlantic Seaboard

BOSTON

Rail movement still hampered by embargoes.—Lack of motive power a factor in New England.—Prices strong but conservative operators try to prevent high figures.—Tidewater Coal Exchange to continue.—Hampton Roads despatch continues poor.—Pressure to get anthracite forward.—Outcome of negotiations in doubt.

Bituminous—Since March 25 practically all of New England has been bottled up by embargoes. In April, the New York City embargo against shipments via West Albany was modified, but at this writing deliveries for Boston & Maine R. R. destinations are still under the ban. The ac-

cumulation of freight cars at or en route to the Boston & Maine gateways had been diminished only one-half in two weeks and it is easy to see that with the coal season starting out in this fashion the outlook for the next 60 days is none too favorable.

Car supply is improving in most parts of Central Pennsylvania and if soon these New England embargoes can be raised there will be much better volume than was really looked for a month ago. Local labor troubles are gradually being smoothed over as the mine-workers come to understand the bearing of the recent wage settlement.

An important element in the Northeast is the poor shape in which some of the roads find themselves on motive power, 450 cars daily, all kinds of freight, are about all the Boston & Maine is able to take away from the New York City under present conditions and it is doubtful if this can be materially increased until more engines can be had. Certain locomotives borrowed from the New Haven during Government operation have now been returned, and certainly the New Haven needs all the power it can get if it is to serve industries on its line. The harbor strike in New York has had the effect of shutting off shipments via Harlem River, thereby closing that important gateway. For most of the past fortnight therefore there has been but one all-rail avenue open, that via Maybrook, and even there much congestion is in evidence.

Meanwhile, those steam-users dependent upon the all-rail channel are fast depleting their reserves. Steam anthracite taken during March has served to extend stocks of bituminous measurably, but there will be an acute situation if receipts continue light another three or four weeks. For a time, Hampton Roads shipments, in a sense, came to the rescue, but delays at the Virginia terminals have made such shipments of rather doubtful dependence. Demurrage has raised the delivered cost to such high levels that buyers, many of them, prefer to take their chance of getting coal all-rail.

The rush for rail coals of acceptable grade continues insistent; both New York and Philadelphia agencies are beset with New England would-be purchasers and it is a matter for serious thought what will be the outcome. The railroads, themselves, are distressed about the difficulty of securing contracts and it is persistently rumored that the old custom of assigned cars will be reinstated. Operators say they will sell railroad fuel at "the market," but prices on their present range are not attractive to railroad purchasing agents.

Quotations continue very firm. The more reasonable operators are trying hard to prevent anything like a runaway market. It is realized this is a political year and that on very small provocation some kind of drastic control could be exercised. The result is that several producers have set for themselves a top price both for contract and for spot sales and the many smaller shippers are being counselled not to attempt pyramiding on coal.

It is understood that the Tidewater Coal Exchange will be continued as a voluntary association of shippers, the expense to be shared by the railroads. Railroad management is by no means a unit on the advantages of such an arrangement, but enough factors have agreed to a program to warrant putting the plan into operation at all the piers except at Hampton Roads.

The New York piers are only comfortably supplied with coal, mostly for bunkering and New York requirements. Port Reading piers are embargoed temporarily because of the harbor strike, only a comparatively few barges and floats having been delivered alongside the dumping facilities.

On Pocahontas and New River the Hampton Roads situation has improved very little. Several bottoms destined for New England have earned from $1 @ $2 demurrage and delivered prices have had to be marked up. Car supply is improving and movement is more regular, but it will take several days to catch up and restore normal loading. Contracts are being taken for Pocahontas agencies on the basis of $4 per net ton f.o.b. mines, plus charges.

Quotations at wholesale, for spot shipment, range about as follows, at the points indicated:

	Cambrias and Somersets	Clearfields
F. o. b. mines, net tons	$4.25 @ $4.85	$3.75 @ $4.50
F. o. b. Phila., gross tons	6.60 @ 7.25	6.05 @ 6.85
F. o. b. New York, grs. tons	7.00 @ 7.60	6.40 @ 7.20
Deliv'd alongside Boston	9.00 @ 9.85	8.55 @ 9.45
All-rail, delivered at Lawrence, Mass.	8.90 @ 9.55	8.32 @ 9.16

Pocahontas and New River are quoted at $6.54@6.90 f.o.b. Hampton Roads, and at $9.40@9.85 delivered alongside Boston. On cars Pocahontas has been sold as high as $11.50, demurrage included.

Anthracite—Unremitting pressure is exerted to get forward domestic sizes. The dealers have very light stocks and the public is buying as freely as allowed. Retail prices have been generally advanced, due partly to increased rates on water coal and partly to new wage scales for teamsters and coal handlers. There is much criticism, and investigations are both rumored and in progress, but the retailers can show mounting costs that justify the prices made.

The trade is keenly interested in developments between mine-workers and operators. There have been rumors that an agreement would be reached April 15, but it is only clear that the mine-workers want to be restored to the pre-war differential they enjoyed over the bituminous miners.

NEW YORK

Anthracite continues short at tidewater with demand strong.—Line dealers receiving prompt shipments.—The West is in need of fuel and dealers send many inquiries to local dealers.—Situation in New England reported as serious.—Bituminous deliveries affected by so-called "outlaw" strike.—Railroads place embargoes on shipments.—Producers expect several months of active business.

Anthracite—The efforts of buyers to place orders has resulted in some spirited bidding for coal at the mines, and the result has been that some high prices have been heard of. All the companies and many of the independent producers, especially the largest adhere closely to the regular schedule but it is reported that some of the smaller operators are receiving around $9 for the domestic sizes.

Production is reported as being well maintained but receipts at tidewater are far from normal. Dealers, dependent upon deliveries here, say that coal is arriving slower than for many weeks back. They claim that line shipments are being kept up in better shape.

There is a decided lack of coal as far West as Minnesota and many inquiries are being received here for prices and prospects for early deliveries. Similar inquiries are being received from the Canadian trade. Wholesale dealers are sending the information wanted but are not making any promises of quick shipments.

Most shippers look for a shortage of cars this summer which with the expected constant heavy demand for the domestic coals makes the outlook anything but rosy for the consumer. Another factor in the situation will be the increase in the use of anthracite by the railroads covering the hard-coal fields. This is made necessary by the continued shortage of bituminous. Some railroads have already issued a circular letter to their engineers and firemen calling attention to the lack of bituminous and requesting them to use anthracite more freely by increasing the quantity in the mixture with bituminous. The trade looks for a change in conditions as soon as a new working agreement between the operators and miners is reached.

New England continues to be badly in need of coal and considerable is being sent to the dealers in those states. In the Metropolitan district the demand continues heavy while supplies are short. Retail dealers complain of slow deliveries and predict an active summer season. Their books are filled with unfilled orders, some dealers telling their customers they may receive their coal about the middle of May or July 1.

The call for the steam coals is easier. There has not been so active a market and quotations are slightly easier. Buckwheat has been quoted during the week from $3.65@$4., grade and quality entering into conditions. Rice and barley are easy but there is no surplus coal lying about.

Current quotations for company coal per gross ton at mine and f.o.b., tidewater, at the lower ports are as follows:

	Mine	Tidewater
Broken	$5.95	$7.80
Egg	6.35	8.20
Stove	6.60	6.45
Chestnut	6.70	8.55
Pea	5.30	7.05
Buckwheat	3.40@3.75	5.15@5.50
Rice	2.75@3.25	4.50@5.00
Barley	2.25@2.50	4.00@4.25
Boiler	2.50	4.25

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—While the trade has been upset because of the lack of coal and the uncertainty confronting the market, dealers are optimistic and expect steadier conditions as soon as all of the mining regions have come to some agreement regarding working conditions.

The so-called "outlaw" strike of switchmen and other railroad workmen has resulted in a set-back for the market. Embargoes were ordered by some of the coal-carrying roads in the bituminous fields the first day of the trouble in the East and it was expected that similar action would be taken by other companies. The continuance of the coastwise strike has cut a big gap in the bunker tonnage, but it is now expected that with the trouble petering out, conditions will soon become normal as far as this port is involved, unless the strike of the switchmen affords encouragement to the striking unions to prolong the conflict.

Producers look for several months of active business. Supplies are short, most large consumers having been forced to use their reserve stocks during the past few weeks. With weather conditions becoming seasonable there will be a reduction in consumption with an increase in stocks, enabling a quicker distribution of coal.

Buyers are finding it harder to pick up free coal. On account of the poor car supply and the resultant cut in production available coal is becoming scarcer. Contract coals continue to be mined freely.

The demand has been such that many operators and shippers are booked ahead for some time to come. The making of contracts has about been completed with running from about $3.50@$4.50 for the good grades. Gas coal is in good demand and short. Producers and shippers are not making promises as to deliveries and quotations range from $4.50@$5 for good Pittsburgh coal. Quotations on the various grades range from $3.75 to $5.00 according to quality.

PHILADELPHIA

Anthracite trade stirred by return of cold weather.—Dealers have small tonnage on hand except pea.—Price question still undecided by some shippers. — Wage-scale adoption hoped for soon.—Steam coals all taken. — Bituminous deliveries do not increase.—Active spot market.—Price climb slightly halted.

Anthracite—There has been a week of unusually cold weather prevailing in this district and the result has been a heavy call upon the dealers for immediate deliveries in small lots to tide their customers over to warmer weather. For four days in succession the temperature dropped below freezing and this with windy days has caused the consumption of much coal. Outside of pea there has been very little coal to deliver, as the tonnage of large sizes arriving in the city has been extremely light.

The stocks of pea coal are fast dwindling and at the present rate there will soon be little of this size left in the yards. Due to the lack of the larger sizes the dealers are in position to make deliveries of pea in good volume to such of their customers who want to put it for the next winter.

Despite the action of the larger companies in making their sales to date at the old schedule, the dealers are in some instances badly upset, especially those getting a large proportion of their supplies from certain individual shippers. These latter concerns are delivering their coal on the retroactive basis as to price and as a consequence those dealers receiving this coal are put to a great deal of annoyance. Usually they deliver the coal to their choice trade with the understanding that no bill will be sent until they know definitely what the coal is to cost them.

As yet there are no signs of a greatly-increased tonnage from the mines. While the car supply is all that could be desired, still the men are slow to take up their work after the holiday season, which is usual at this time of the year. Taking advantage of this situation many of the breakers in the region are undergoing repair now, and running as they have for an entire year almost without stoppage, it becomes necessary to make an overhauling. This also has cut into the tonnage.

The dealers have all ceased to advertise for business, the only announcements recently being those from the more progressive concerns endeavoring to explain to the public the present conditions and their inability to make deliveries of all summer orders as soon as placed. As a matter of fact all dealers have adopted the practice of delivering small tonnages where coal is urgently needed for immediate use, and apportioning the balance of their tonnage on the summer orders in the same rotation as adopted last year.

The demand for steam sizes goes merrily on. All sizes are in strong demand and it seems to be the desire of all users to lay aside as heavy a tonnage as possible before the prices become increased following the adoption of a new wage schedule. There are practically no contracts in effect on the steam sizes and the consumer considers any excess stock that he may get now as just so much of a bargain.

Bituminous—At this time there seems some indication of a checking in the high price tendency of the market. Spot coal, of course, remains quite high, but the upward movement has not continued at the pace of the last week. It is believed a good bit of this effect is due to the stand taken by the larger shippers to keep the market from becoming a runaway, with the resultant adverse criticism following the release of Government control. Many buyers also refused to take on additional tonnage at the top prices, quite a few going almost to the point of suspension in their refusal to pay limit figures.

We do not think the tonnage of coal coming into the market has appreciably increased, but there are no plants that are suffering for the lack of fuel. The scarcest coal this time is high volatile, particularly the Fairmont coals. The steel mills are short of gas coals and have come into the market and are taking many grades that ordinarily they could not use on account of high sulphur content, but in their stress for fuel they are overlooking this factor. Added to this, the railways, always large users of high volatile fuel, are sharing with the manufacturers the limited production. As a result of this the spot market on Fairmont coal is running from $4.95 to $5.40 and this class of coal for the time holds the unusual distinction of being higher in price than many of the high grade Penn. steam coals. On ordinary high volatile Penn. coals similar to Greensburg, the prices quoted have run $4.40@$4.65, while good qualities of steam coal such as Pools 10 and 11 have been quoted $4.65@$5.

Contracting has almost ceased. On the part of the sellers it would seem they have come to the conclusion that they were too quick to close as much tonnage as they did at the contract prices running at $3.50 @ $4, with the bulk nearer the latter price. In the face of the good prices realized in the spot market very few are willing to consider contracts, yet it is a mutual feeling, for the consumer who is not under contract is inclined to take his chance with coal at the market for a while, with the idea of being able to contract to a better advantage later in the season. Even with those concerns who have contracts there is an inclination to complain of the light shipments being received by them.

BALTIMORE

Great inducements for export shipping have sent a flood of coal to tide beyond capacity of quick handling and piers are embargoed. — Line conditions easier despite poor car supply reported.—Market remains excited.—Hard-coal men in state of uncertainty.

Bituminous—The great inducements offered for export movement both as to price and methods of payment have sent a flood of coal to the piers here beyond the capacity of absorption of vessel supply with permits to send out coal on foreign account. The close of the week found 2,341 cars at Curtis Bay alone, with 1,780 more running on the Baltimore & Ohio and Western Maryland for Curtis Bay, while the dumpings were running only 250 to 275 cars a day.

The general car supply on the Baltimore & Ohio system, which started the week at from 65 to 70 per cent dwindled to around 38 per cent, with less than 45 per cent on the Eastern end of the system. The accumulation at tide came despite a loading for export cargo coal of more than 50,000 tons for the week, and the situation at the end of the week was such that a temporary embargo was placed on further shipment to the piers here. The line situation here is improved as to supply, although some consumers are still more or less feverishly in the market for immediate coal, and the entire trading remains excited.

The car supply on the western Maryland has run good the past week and the coal thus received has done much to relieve the tenseness of the situation. The situation seems to be that plenty of coal is coming in at high price, but the somewhat easier market has so far not broken spot prices, coals of good grade demanding all the way from $4.50 @ $5.50 f.o.b. mines for steam varieties, and around $4.50 @ $5.25 for gas coals.

As predicted in these letters there is a tendency to shade down prices from first contracting figures. Contracting is not even now general, but some closings are being made all the way from $3 @ $4.50 for from fair to best coals. There is a wide range, however, even for coals of the same grade, and no schedule of prices can be set within a reasonable range of surety.

Anthracite—The hard-coal situation still hangs over awaiting final action along wholesale lines. Very little coal of any size is now coming through. This makes it necessary for cautious acceptance of orders for delivery at any other price than that to be fixed at the time of delivery.

Up to April 1 there was some acceptance of orders on the basis of existing prices irrespective of the time of delivery of the fuel, but the light receipts and the fact that yards here are but meagrely supplied in most cases caused a general change in the method of dealing.

Eastern-Inland

PITTSBURGH

Wage matters practically settled.—Leading operators favor holding prices down.—Gas coal brings high prices.—Prices to vary with quality.

At this writing the operators and miners of the Pittsburgh district have not reached a complete agreement on wages and conditions but there is every prospect that a full agreement will be reached very shortly.

All wage rates are agreed upon, on the basis of a general 27 per cent advance from the war time scale, the disagreement being only upon rents. The miners contend that there should be no rent advances at all, while the operators wish to advance rents, and at the same stating that there are repairs and improvements to be made, which should be taken into consideration.

Taking account of both pick-and-machine mining in the proportions in which they obtain in the Pittsburgh district, it is computed that the 27 per cent advance over the original scale means about 40c. per ton in direct labor cost, not counting advances to foremen, clerks and various minor officials, the labor cost having averaged about $1.40 under the old scale. Attention is directed to the fact that the cost of day labor per ton of coal mined has increased in the past few years in considerably greater ratio than that by which the tonnage rate has gone up, by reason of day men working less assiduously, and for other reasons.

There are rumors that leading operators of the district, with some co-operation on the part of operators in nearby districts, are endeavoring to formulate plans whereby coal prices can be held down to a moderate level, the idea that this should be done originating with banking interests. The market itself has not yet become clearly defined. It is reported that contracts for the twelvemonth have been made at $3.25, $3.50 and perhaps slightly higher figures for steam coal, while there are reports of some gas coal contracts made at much higher figures, up to $4 and in one case, for a period of a few months, at $5 or thereabouts. The Pittsburgh Coal Co. is seriously considering what would be a great departure from previous practice in the Pittsburgh district market, involving the establishment of a differential between its Panhandle and its up-river coal.

Throughout the market there is seen a decided tendency to make price distinctions according to quality, distinctions which, operators say, ought to have been established long ago. As for prompt coal, it has brought a wide range of prices according to circumstances. Operators assert that considerable tonnages have been sold at less than $4, but buyers of $4.50 and even higher having to be paid. Only a rough generalization can be made as to the market now, prices not being clearly defined, as follows: Contract steam, $3.25@$3.50; contract gas, $3.75@$4; prompt coal, $4@4.50, per net ton at mine, Pittsburgh district.

COLUMBUS

Question of price is still unsettled, although some regularity in quotations has appeared.—Some of the jobbers are still asking higher prices.—Active bidding for the available supply of coal.—Car shortage still hampers production.

With the lifting of Federal restriction on price, some confusion appeared in the coal trade in Ohio. Operators and jobbers were at a loss to estimate the new price list and accounting departments were put on figuring up the increased costs of production. Some of the companies have not yet finished this work, so the price question is still up in the air to a certain extent. But a number of prices were quoted, showing a wide range.

As most of the larger producers have their tonnage tied up for some time, they are not concerning themselves about quotations to any great extent. The usual prices prevailing in the Hocking Valley are $3.65@$3.80 for lump, $3.40@$3 60 for mine-run, and $3.15@$3.30 for nut, pea and slack. Pomeroy Bend prices are about the same as Hocking.

Eastern Ohio prices are slightly higher with lump selling in the neighborhood of $3 85@$4 and mine-run around $3.50@$3.75. West Virginia prices are higher than those prevailing in Ohio with splints around $5 and possibly higher and Pocahontas about $6 for lump and $5.50 for mine-run.

Demand from all sources is extra good. Retailers are buying briskly as many of the householders are laying in their supply of fuel for the coming winter. Retail stocks are not heavy, especially in the northern and western parts of Ohio. Michigan dealers are also buying actively. Dealers are selling at a margin of about $2 over the cost at the mines plus the freight charges. There is a good demand for Pocahontas and West Virginia splints, with the former rather scarce.

Demand for steam sizes is also strong in every locality. Manufacturing concerns are trying to secure some surplus stocks but have not been successful in that direction. Railroads are taking a fair tonnage, some of which is confiscated which reduces the tonnage shipped to commercial users.

There is a general movement for cities, public instiutions and schools to secure their fuel supply early and that is visibly stiffening the market. Practically no steam contracts have been made as costs have not yet been figured to the satisfaction of producers.

Lake shippers are strong after tonnage but very few agreements are reported Some coal is being loaded at Huron from eastern Ohio mines for shipment to Lake Michigan points, but the upper passages will not be opened for some time. May 10 is the date now set for resumption of Lake traffic in Lake Superior. Stocks in the Northwest have been largely used and the Lake season promises to be unusually active.

Car shortage on all Ohio coal-carrying roads still continues and consequently production is still held down to a rather low point. In the eastern Ohio field the output has been less than 40 per cent of capacity. Hocking operators had to be content with a 50 per cent or less supply and the same is true of Pomeroy Bend and Crooksville. Recent orders on the part of the Interstate Commerce Commission for the return of 825 coal cars daily from the Northwest are expected to help the situation in Ohio.

Retail prices per ton in Columbus are:

Hocking lump	$7.50
Hocking mine-run	7.25
Pomeroy lump	7.50
Pomeroy mine-run	7.25
West Virginia splints, lump	8.50
West Virginia splints, mine-run	8 25
Pocahontas lump	10.50
Pocahontas mine-run	10.00

CINCINNATI

Retail coal prices were $1 and $1.50 a ton higher last week than they were the week before.—Variation in the increase depended on the dealer quoting and the kind of coal quoted on.—Advance followed giving up of government coal control.

Operators first announced increases and these immediately were passed on to the public by retailers here and in other cities. The worst is yet to come, however. Bituminous lump coal was selling at $8.50 and $9.00 delivered on the hilltops with prices about 25c. less for downtown deliveries. Quotations on smokeless coal were difficult to obtain because there is little smokeless available, and it is believed that smokeless coal probably will become more abundant now, because operators will be able with removal of government restrictions to fix a price on it for domestic American consumption.

Dealers are not tying themselves up with contract prices until they see how the situation shapes up, and now that government restrictions are the thing of the past, dealers believe that operators will sell to them more readily than for export trade, as a better price will be paid. Dealers are buying all the coal they can lay their hands on without binding themselves to contract. They believe it is a good time to buy under present price condition, as higher prices are a certainty.

The situation in this territory is easier, due largely to the return of mild weather. Some coal is being delivered by river and the railroads have delivered sufficient for the period here, although the big demand outside the territory has not yet been relieved. Although domestic demand is very slow, dealers say there is every indication that the public will do more spring and summer buying than during any previous year.

The car supply was satisfactory and ran as high as 70 per cent the first half of the week, but fell off a little toward the end. Operators here are hoping that continued warm weather will help the roads bring their motive power back to a point where it will be able to handle 50 per cent more traffic.

The familiar procession of buyers from outlying districts has begun and they are trying in every way to get contracts formulated and signed. Operators and distributors do not care to enter contract with them because of the uncertainties of the market.

Southern

LOUISVILLE

Prices rising rapidly as a result of continued car shortage, and high cost of low production.—Demand fading somewhat as result of high quotations.

Kentucky operators after shipping on existing contracts have very little surplus coal to offer as a result of a very low car supply, and prices are advancing rapidly on such supplies as are available. Demand is not quite so keen for domestic sizes, nor is steam being bought except for immediate demand. Railroads are buying emergency coal, and demand from gas and byproduct plants continues heavy.

Car supply for the month ending March 31, was the worst ever known in the state, or in most any section, the Louisville & Nashville system showing only a 46.85 per cent of car supply, out of which the Hazard district had but 40 per cent, and Cumberland Valley but 42 per cent supply, neither reaching the general average of the road.

Prices have jumped about $2 a ton on eastern Kentucky grades as a result of the scarcity of all grades. Harlan operators are opposed to allowing block coal to go over $4.50 a ton, claiming that it is not fair to the domestic consumer, but mine-run is selling at $4.50 and up, and indications are that very little block will be produced for the time being. Reports are being received of Straight Creek quotations at $5.25, and of some other eastern Kentucky grades at similar figures.

Quotations in the Harlan field are on a par with Hazard field quotations at the present time, lump being quoted at prices ranging from $4.50 to $5 a ton; mine run, $4@4.50; and nut and slack at $3.50. Western Kentucky is asking $3.25 for lump; $2.85@$3 for mine-run; $2.50@2.60 for nut and slack, and $2.25@$2.40 for fine screenings. In some cases quotations are running above these figures and some operators are getting less. Although demand is not heavy, production is so light that what little coal is available can command a fancy figure.

Operators claim that in event of a good car supply prices will drop fast, as competition will force prices down. A 75 per cent car supply would force lump coal down anywhere from one to two dollars a ton. Small mines and wagon mines are springing up fast again as a result of high prices and control having been lifted. That coal mining hasn't been profitable for months past has been shown in the absence of these small mines. However, they will still further scatter labor and car supply, and do no good.

Retail prices are out of sight, with eastern Kentucky lump at $8.50@$8.75; mine-run, $8; nut and slack, $7.50; western Kentucky $7, $6.50 and $6. These prices are somewhat lower than prices will be when retailers begin receiving $5 per ton of coal, which will be sold on the $2.75 margin for block and $1.75 margin for steam, just the same as if low prices prevailed.

BIRMINGHAM

Market remains strong, with inquiry very active and insistent.—Car shortage holds production to a figure very much below the news of the trade.—Heavy rains have also flooded mines and handicapped output to some extent.

All energies of operators and sales agencies are now being directed toward an increased coal production and an acceleration in the movement of coal to the consumers. There is no need for activity in the selling line, the demand being almost unprecedented for all grades. The problem is securing a supply to meet the trade requirements. There has been little if any improvement in the amount of equipment furnished the past week, the average supply of cars being about 60 per cent of the carrying capacity needed. There are no stocks in the bins of consumers, who have to depend on current receipts to keep their operation going and, as a consequence, there is a constant urging for more liberal shipments, which cannot be made without an improvement in the transportation facilities.

If the cars are furnished there is sufficient labor to produce the necessary coal. Railroads are very short on fuel and continue to confiscate or order mines to bill to them such of their output as is needed. Discrimination in the allotment of cars to mines on the Southern railway is charged, claim being made that contract mines and a subsidiary operation of the company are receiving a 100 per cent supply, other operations getting their pro rata share of the remaining equipment, and temporary injunctions have been obtained by two coal companies to restrain this practice.

Quotations have not yet become stable under the increased mine cost, due to 27 per cent increase awarded to mine workers and granted by operators effective April 1, ranging about as follows, per net ton mines for the month of April:

	Mine-Run	Prepared
Big Seam	2.95@3.25	3.45
Black Creek	4.00	4.45@4.50
Cahaba	4.00@4.35	4.35
Carbon Hill	3.35@3.50	3.50
Nickle Plate	3.35@3.50	

Domestic quotations range about as follows:

Lump	
Big Seam	3.25@3.50
Black Creek	5.00@5.50
Cahaba	4.50@6.00
Carbon Hill	3.50@3.75
Montevallo	7.00
Montevallo Straven	6.75
Corona	4.50

Production for the week ending March 27 totaled about 333,000 net tons as per figures tabulated by the Alabama Coal Operators' Association. Heavy, incessant rains and labor shortage affected production slightly.

Lake Region

BUFFALO

Not much further change in bituminous.—Supply only fair. Speculation over the car supply.—Light mining lately. Coal movement unsteady.—No anthracite surplus.

Bituminous—The situation is about as it was last week, and the supply of coal also is much the same. Shippers will get a big consignment one day and then none for awhile. Every effort is being made to keep the ordinary run of the business, but with so many uncertain elements in it the task is a hard one.

The principal difficulty is lack of cars. They are about as scarce as they were, but the trade is afraid they will before long upset everything by becoming too plentiful, just as they have for so long by being scarce. A leading shipper said yesterday that the reports gave figures for a large output last month, so that the miners are ready to dig the coal if the cars will move it. No new cars are building of account, but repairing is said to be general, so that a prompt delivery of coal mined would be quite possible at almost any time and then coal would soon be begging for a market.

But it is all conjecture. So many elements of doubt come into the count. The Lakes are soon to open and then there is a hungry West to supply for a year in only eight months. The export lists are crowded with coal and that trade alone may take all the surplus. But for the terrible rates and prices it surely would, so all that the shipper can do now is to exercise great caution. He must mostly sell his coal before he buys it and he must know his customers. Sometimes a car is refused, for the apparent reason that a reduction is looked for. The jobber's margin is small yet for the most part and he cannot afford to risk many losses. There are those who look for an early decline in prices and their guess is as good as anyone's.

A comparison of individual process at present evolves the following as the best average quotations: Allegheny Valley (all mine-run at present), $5.75@$6; Pittsburgh and No. 8 lump and three-quarter, $6.25@$$6.50; mine-run and slack, $6@$6.25; smokeless, $6.50; Pennsylvania smithing, $6.75 per net ton, f.o.b. Buffalo. These prices are exceedingly flexible and will be governed by the car supply mostly. At present the trade is affected by light Easter mining and a switchmen's strike that may last sometime.

Anthracite—The receipts are held up at present by the switchmen's strike and no one knows. This increases the existing shortage so visibly that all the coal offices in the city are beset by a host of consumers. The telephones are such a burden that there are threats of suspending some of them. What the actual shortage is cannot be told, for many consumers are trying to lay in winter coal, while all that the dealers are trying to supply are those who are out of coal.

Nothing is said yet of prices, beyond the giving of promises that all prices are spot and there will be no back charges. The failure to fix the mining scale is costing the operators much money. Speculations as to what the new prices will be look to an increase of $1.50 a ton or so. Just now a cold April requires much coal. The natural gas gives out at every cold snap, which is a great hardship to all consumers. For five days up to the present the temperature has not been above freezing, and this after the hardest winter on record.

The Lake trade is waiting for coal. There may be some bituminous to go when the ice is gone, but there is no anthracite in sight. The city would complain bitterly if any coal were shipped West with the local supply as short as it is. So the shippers do not even talk of Lake shipments, though they are usually loading briskly at this time. Still, with the report of severe shortage in mining last season it is remarkable that the severe winter, with less natural than for a long time, was gone through safely.

CLEVELAND

Fair-sized contracting has been done in No. 8 mine-run and slack at $3.25.—For No. 8 coal for the Lake trade $3.50 has been done.—Retail dealers are paying $4 for spot tonnages of No. 8 slack and mine-run.—Excepting anthracite, all prices have been marked up.—An increasing volume of No. 8 coal is moving to Lake Erie ports.

Bituminous—Definite contracting is known to have been done in No. 8 slack and the mine-run at $3.25, f.o.b. mine. Two No. 8 district operators have named this figure in quotation-making business with a northern Ohio steam coal consumer. Other operators, still holding off from contracting, are reported in favor of pegging the market at $3.25, an advance of 90c. over the government maximum. Well-informed operators believe $3.25 will rule for the spring and early summer at least. Whether it will hold for late summer and early fall, when production is near normal, is a question with some operators. Every effort is to be made to prevent a runaway market. That is the word being passed along "coal row," and an investigation of profits accruing from a $3.25 price is welcome.

With No. 8 slack and mine-run at $3.25 for lower Lake trade, the usual differention of 25c. brings the Lake trade figure up to $3.50. Some business is known to have been done at this price. On a basis of $3.25 for the lower Lake trade, No. 8 ¾-in. coal will bring $3.50 and 1¼-in. $3.65. Most of the business being done by retail coal dealers in No. 8 slack and mine-run is at $4. This is not contract business, but represents mostly spot sale. A break is looked for and dealers expect to pay not over $3.50 within a month. This is 25c. higher than operators say they will ask.

Dealers have marked up all of their domestic prices with the exception of Cannel lump, which remains at $11, delivered. West Virginia splint has been advanced from $8.30 to $8.75. No. 8 Pittsburgh lump has been increased from $7@$7.50 to $7.75. Coshocton lump, formerly $7.35, now is placed under the No. 8 Pittsburgh lump classification and will take the $7.75 price for the present. Massillon lump, now called Millfield lump, goes from $7.40@$7.65 to $8.50. On steam coal the new price schedule still is indefinite because dealers average their sales at the close of the month. They say, however, they are paying $4 for most of their No. 8 slack and mine-run. Adding $1.40 freight and $2.08 for margin (the margin allowed by the Fuel Administration) and the retail delivered price is brought up to $7.48. No. 8 slack has been bringing $6@$6.25, and mine-run $6.45@$6.60. Probably, No. 8 slack and mine-run will settle around $7, delivered.

Demand for all steam-coal grades continues abnormal. The past week has been the worst of the year, so far as production is concerned, with the Easter holidays cutting working time to a minimum. Even so, car supply for the past week has been increased only a trifle. Labor is reported extremely short. Railroads are not well supplied, and much coal consigned to Lake Erie ports has been diverted to railroad use.

DETROIT

Competition of domestic consumers attempting to buy coal at the mines is credited with being a price-advancing factor.

Bituminous—Despite the attempts of reputable jobbers and producers to maintain a price equilibrium that will be in harmony with the increases in production costs, the bituminous market is in a more or less unsettled condition while prices display a rising tendency that is viewed with **disapproval by men prominent in the local** trade

The unrestrained eagerness of many consumers of steam coal to stock up early is said to be the influence back of the rising prices. Buyers representing these consumers are reported to have gone into the producing districts, where they are bidding against each other for the limited supply that is to be had. The shortage of car supply and consequent restriction of production creates a situation that renders the market very susceptible to price-advancing influences.

Jobbers and wholesalers say it is not reasonable to criticise the operators who accept the highest price offered for their coal, but believe the consumers who have thus undertaken to interfere with the regular system of distribution are the ones at fault. Had these consumers placed their orders with jobbers, the latter, with a better knowledge of the trade, would have been able, they say, to obtain the coal, without creating a situation so unsettling to the market.

Middle West

MIDWEST REVIEW

Buying mania on the part of the public is continuing strong and will continue until the car supply is large enough to take care of the demand to some extent.—In Michigan, West Virginia operators who last year were glad to get from $1.60@$1.75 for their screenings, are now asking $4.25.

Illinois and Indiana operators, in our opinion, are to be commended in the highest terms for the stand they have taken in regard to their April prices. These operators have set a flat price running from $3 @ $3.40 for their prepared coals, and are sticking closely to this price scale, when, as a matter of fact, the demand for coal is so great that they could get at least a dollar per ton more, should they desire to do so. In taking the stand mentioned above, these men are endeavoring to show the public that they are worthy of trust, and are not taking advantage of the temporary situation, to increase the price of coal beyond all reason. Operators in the East, especially in the West Virginia, Ohio, and Pennsylvania fields, could well afford to follow their example.

CHICAGO

Within a short time, Chicago, for the second or third time this year, will be on the ragged edge of a coal famine.—Cause of present predicament is the strike on the part of the switchmen.

While this outlaw strike situation has hurt Chicago, it has helped other portions of the territory, as all coal shipments for Chicago are embargoed, and this means that operators with business in Chicago will have to apply their coal elsewhere in the state. The strike will have its sunny side in that it will give the retail dealers, as well as manufacturers in Illinois, outside of Chicago, an excellent opportunity to accumulate a little surplus.

Of course the demand for all kinds of coal for shipment to Chicago is keeping up very strongly, with one or two exceptions. When the local trade saw the prices which were being asked for certain grades of Eastern coal, and we have in mind particularly some Pocahontas and New River products, they realized at once that prices were so high that it would be impossible to market this coal in this city. Therefore, they made arrangements to handle other grades of coal, and as a result, the demand for Franklin County coal from Illinois, and the higher grades of coal from Indiana, are in constant demand, and will probably replace some of the Eastern fuels.

Prices of coal per ton are as follows:

		Freight rate Chicago
Illinois		
Southern Illinois Franklin, Saline and Williamson Counties		
Prepared Sizes	$3.15 @ $3.40	$1.55
Mine-Run	3.00 @ 3.10	1.55
Screenings	2.60 @ 2.75	1.55
Central Illinois Springfield District		
Prepared Sizes	$3.00 @ $3.25	$1.32
Mine-Run	2.75 @ 3.00	1.32
Screenings	2.50 @ 2.60	1.32
Northern Illinois		
Prepared Sizes	$4.00 @ $4.50	$1.24
Mine-Run	3.50 @ 3.75	1.24
Screenings	3.00 @ 3.25	1.24
Indiana		
Clinton and Linton Fourth Vein		
Prepared Sizes	$3.00 @ $3.25	$1.27
Mine-Run	2.75 @ 2.90	1.27
Screenings	2.50 @ 2.65	1.27
Knox County Field Fifth Vein		
Prepared Sizes	$3.00 @ $3.15	$1.37
Mine-Run	2.75 @ 2.90	1.37
Screenings	2.50 @ 2.60	1.37
Brazil Block	$4.25 @ $4.50	$1.27
Eastern coals		
Pocahontas and New River Coals		
Prepared Sizes	$5.00 @ $6.00	$2.65
Mine-Run	4.00 @ 4.50	2.65
West Virginia Splint and Gas Coals		
Prepared Sizes	$4.25 @ $4.75	$2.65
Mine-Run	3.75 @ 4.25	2.65
Southeastern Kentucky Hazard, Harlan and Big Sandy Fields		
Prepared Sizes	$4.50 @ $4.75	$2.45
Mine-Run	3.75 @ 4.25	2.45
Smithing Coal	$4.50 @ $5.25	$2.60

ST. LOUIS

An improvement in car supply the first time in many months.—Some little dissatisfaction among miners.—Switchmen's strike has demoralized conditions and everything is uncertain.—Demand has been good on everything, especially steam.

At some mines in the Standard district there was dissatisfaction to the extent that some of he miners refused to work and some of the mines were idle for a few days, but eventually it seemed to be settled. The drivers in many places were not contented with their arrangements and they were some other little coal differences that have been pretty well adjusted. Other than that the Standard field showed improvement.

Cars were more plentiful, some mines working five days straight and the tonnage was heavy, especially for railroads. The steam call has been good and there was a demand that the supply could not take care of, both in the city and outside. A heavy tonnage of coal has been moving north to the Chicago market from this field.

The same conditions apply to the Mt. Olive district, although the car supply has not been as good there as in the Standard field.

The Missouri Pacific is still up against it as far as fuel is concerned. It is beyond the understanding of anyone in this part of the country, either the railroad man or the coal man, why a road like the Missouri Pacific is always short of coal and obliged to confiscate several hundred cars a month to keep its trains moving. Several operators in the field are refusing to sell coal to the Missouri Pacific and others are asking as high as $3.15 for Carterville mine-run.

Conditions in St. Louis are quiet. There is a little demand for domestic storage coal. Steam coal is good on account of the industrial activities. There is no anthracite coal coming in to speak of and no smokeless. There is no change in retail prices, and the wholesale prices are as follows:

Carterville and Franklin County lump, egg and nut sizes	$3.35@3.40
Carterville mine-run	3.00
Carterville screenings	2.75
Mt. Olive lump, egg and nut for outside shipments	3.00
Mt. Olive lump, egg and nut for local shipments	2.75
Standard lump, egg and nut	2.75@2.90
Mt. Olive mine-run and Standard mine-run	2.75@2.85
Mt. Olive screenings and Standard screenings	2.50@2.60

The price conditions here started off fairly well, but the Mt. Olive and Staunton Coal Co. broke up the Mt. Olive price of $3 when they made their price for St. Louis customers $2.75.

MILWAUKEE

Coal market continues active, owing to prevalence of cold weather.—All kinds of soft coal advanced 50c. per ton.—Anthracite unaffected.

The anticipated advance in coal prices materialized at Milwaukee since last week's report, the entire bituminous list being marked up 50c. per ton. Anthracite was not disturbed, however. The market is active, owing to the prevalence of raw, spring weather. Coal is scarce, because of bad transportation conditions, and dealers are parcelling out the meager supply as judiciously as is possible. This condition must prevail until the opening of lake navigation and the consequent arrival of supplies in large quantities. All bituminous coal, domestic and steam, are 50c. higher per ton Anthracite remains unchanged. Coke cost $13.25 for large sizes and $10.75 for smaller sizes.

Pacific Coast

SEATTLE

Quotations at the present time are as follows:

Seattle—$6.75 per ton 2,000 lb., f.o.b. bunker tips.

Tacoma—$6.75 per ton 2,000 lb., f.o.b. bunker tips.

Portland—$8.75 per ton 2,000 lb., f.o.b. bunker tips.

Portland—$9.50 per ton 2,000 lb., in the stream over the ship's rail.

The above rates apply to the standard grades of Black Diamond and South Prairie coal.

Quotations on British Columbia coal in Seattle Harbor are as follows:

Comox Lump—$10 per ton of 2,240 lb., f.a.s.

Comox Marine Mixture $9.85 per ton 2,240 lb., f.a.s.

SAN FRANCISCO

The increase in wages of miners, in accordance with report of President Wilson's commission, has had no effect on coal coming here from Utah and Wyoming.

Notification has been sent to dealers of the price remaining the same for April as for last month. As to the future, following April, the situation is a problem, but on account of the summer slump impending, opinion prevails there will be no increase, and if any, but slight. Coals from Utah and Wyoming, f.o.b., net ton, wholesale, stove and lump, $3.65.

Some of the supply for the San Francisco market comes from New Mexico. One company has ordered increase in price to $5. Dealers say this isolated raise will have tendency to reduce demand for this variety and increase demand for Utah and Wyoming, which virtually control the market.

Coke

CONNELLSVILLE

Prices substantially unchanged, with market quiet except in contract foundry coke.—Full car supplies would only slightly increase coke production.

Market prices are about the same as at the time of last week's report. There is very little activity in furnace coke, substantially all the available tonnage for April being applicable on regular contracts or being tied up on sales for the month. The market in general is quotable at $11@$12 for furnace coke and $13@$14 for foundry coke, per net ton at ovens. There are various exceptions, however.

The new wage scale for the region has not been published, but notices were posted some time ago that a general revision would be made on the 27 per cent basis settled upon for the union bituminous fields. The *Courier* reports production in the Connellsville and Lower Connellsville regions in the week ended April 3 at 248,005 tons, a decrease of 6,547 tons.

BUFFALO

Coke supply is still short and prices are high.

Jobbers get but little business, for sales are mostly on contract. Quotations are $12 at the ovens for 72-hr. Connellsville foundry, and $10 for 48-hr. furnace, to which add $2.60 for freight for the Buffalo prices. Domestic-size coke is not moving to any extent at present. The Lake fleet is eager to resume the iron-ore trade, but the ice has not disappeared much lately. It promises to be a late opening.

BIRMINGHAM

Coke market here is very active and inquiry good, but there is very little foundry or furnace coke available above contract needs.

High-grade foundry coke is quoted at $10 @ $11 per net ton ovens, though the prices have not become stable and thoroughly adjusted to the increased cost of production account advance in wages at mines and coking plants. The output is curtailed to some extent by car shortage where coal has to be transported to the ovens in railroad cars.